

OUTLINE OF A NEW SYSTEM OF LOGIC



REESE LIBRARY
OF THE
UNIVERSITY OF CALIFORNIA.

Received

May, 1891

Accessions No.

43542

Shelf No.



OUTLINE
OF
A NEW SYSTEM OF LOGIC.

OUTLINE
OF
A NEW SYSTEM
OF
LOGIC,
WITH
A CRITICAL EXAMINATION
OF
DR. WHATELY'S "ELEMENTS OF LOGIC."

BY
GEORGE BENTHAM, Esq.



LONDON:
PUBLISHED BY HUNT AND CLARKE,
4, YORK STREET, COVENT GARDEN.

1827.

BC101
B4

43542

Printed by Joseph Mallett,
59, Wardour Street, Soho, London.

011

PREFACE.



I HAD been for some time engaged in revising and completing a mass of manuscripts which my uncle, Mr. Jeremy Bentham, had put into my hands, and in drawing up a general treatise of the science, when I heard of the publication of Dr. Whately's "Elements of Logic." Having procured this work, a first glance convinced me that the author had done much towards divesting the science of that useless jargon, of those unmeaning puerilities, with which it had been loaded by the schoolmen ; and which, being the only apparent result of their efforts, have cast so much opprobrium and ridicule on the very name of Logic. On a more careful perusal of the work, Dr. Whately appeared to me to have pointed out, in a very able manner, several of

these errors of his predecessors, and to have gone over the field of the science, such as he had marked it out, with great attention on his part, and consequent advantage to the learner. Still, however, I saw much remaining to be done. Some errors presented themselves to me in that part which Dr. Whately had investigated in the closest manner ; and other topics, which I had been led to consider as the most important, were barely touched upon by him. From these considerations, I thought it might perhaps be attended with some use to logical students, were I to point out the instances where these Elements appeared to be susceptible of improvement, in point of clearness or accuracy, as well as those where I thought the subject might require further development ; and were I at the same time, in order to enable the reader to judge the better of the accuracy of my observations, to give, on each occasion, a general analysis of the principal topics treated of in the larger work I am preparing. And I am the more induced thus to publish immediately an outline of the new system which I purposed developing in that general Treatise, as various circumstances may render it adviseable that I should delay the com-

pletion of the larger work till my ideas have become more certain and fixed with regard to some of the details.

In pursuance of this plan, I have not, on the present occasion, departed materially from the order adopted by Dr. Whately, but have endeavoured to follow him, step by step, comparing his view of every portion of the field with that which Mr. Bentham has taken of it in the above-mentioned manuscripts, in as far as the subject has been there treated of; and with my own ideas, in regard to those parts which Mr. Bentham had left untouched.

The reader may perhaps consider that I have devoted too much space to the critical examination of Dr. Whately's work, and may ask why I have not extended my remarks to other logical treatises. My reason for this preference has been merely because I look upon the *Elements* in question as the last and most improved edition of the Aristotelian system; that, therefore, it is useless to say any thing more of the errors which he has corrected, or of the superfluities which he has eliminated; and that, by criticising whatever appeared to me still to be defective in Dr. Whately's work, my strictures would apply, not

so much to any individual system of his, as to the Aristotelian Logic in general, as improved by this his last commentator.

I have also omitted all mention of French logical writers, who consider the subject in a totally different light from that in which British authors have viewed it. Condillac first rejected the whole Aristotelian theory, and applied the name of Logic to the enquiry into the mode of action of our intellectual faculties. Since then Destutt de Tracy, in the commencement of the present century, published four volumes of Elements of Ideology (including one of Logic), which have become the standard to which the subsequent continental writers have generally referred. His principles are founded on those of Condillac : he suppresses, not only the theory of syllogisms, but also all rules for the guidance of any of our intellectual faculties, confining the science to "pure speculation," unapplied to any practical use. I read over his work some years ago, and on the present occasion I have looked into it again, for the purpose of comparing his ideas with mine : but I found his "Logic" so totally different from the branch of art and science to which I have applied that name, that I thought

it would be a needless waste of time, were I to enter into any analysis of his doctrines, more particularly as clearness of exposition, order in the ideas, or systematic connection of the various principles and theories, are qualities which it would be vain to search for in his "Elements of Ideology."

The above-mentioned manuscripts of Mr. Bentham's were written chiefly in the year 1811; some, however, bear a date as old as 1795, and for the last fifteen years they had not been looked into, with the exception of such as were revised for insertion in the appendix to *Chrestomathia*, published in the year 1817. The subject upon which they give the fullest details is that which may be called the *tactical* part of Logic, comprehending the rules of exposition and of method. The *ratiocinative* part, or that which relates to reasoning, which, in the eyes of most logicians, constitutes the whole of the science, had not yet been entered upon by Mr. Bentham. The rules or systems which I may, in such cases, propose to substitute for Dr. Whately's, being thus entirely my own, are here given with far less confidence than those which relate to the tactical part. But with regard to these also,

Mr. Bentham must not be considered as responsible for the principles I have exhibited. His manuscripts not having been prepared for the press, are, in many instances, in a state far from completion, and, in others, the subject may have appeared to me in a different light from that in which he had viewed it. It is to myself, therefore, that the reader must attribute any errors he may observe in the details of my system ; of which, however, the leading principles must be considered as founded on those of Mr. Bentham.

CONTENTS.

	<i>Page</i>
<u>CHAP. I. Introductory remarks on the style and arrangement adopted by Dr. Whately.....</u>	<u>1</u>
<u>CHAP. II. Definition of Logic, and enumeration of the topics of which the science consists.....</u>	<u>11</u>
<u>CHAP. III. Analytical Outline.—Examination of Dr. Whately's Chap. I.—General classification of entities.....</u>	<u>26</u>
<u>CHAP. IV. Intellectual Faculties enumerated, and the list compared with Dr. Whately's.....</u>	<u>44</u>
<u>CHAP. V. On Terms.—Review of Dr. Whately's Chap. II, Part I.....</u>	<u>65</u>
<u>CHAP. VI. Exposition.—The various modes enumerated and compared with Dr. Whately's species of definition,..</u>	<u>74</u>
<u>CHAP. VII. Methodization, successive and distributive.—Considerations upon which the theory of division depends, and examination of the Aristotelian rules of division.....</u>	<u>97</u>
CHAP. VIII. On Propositions, considered with a view to logical deduction.—Their classification and reduction	

to their simplest forms.—Examination of Dr. Whately's classifications.....	119
CHAP. IX. Deduction, or Syllogistic Ratiocination.—Forms of syllogisms substituted for the Aristotelian moods and figures.....	142
CHAP. X. Induction.—Refutation of the assertion, that there are not two kinds of reasoning.—Definition of induction.—Considerations upon which the validity of the operation depends.—Review of Dr. Whately's Dissertation on the Province of Reasoning.....	172
CHAP. XI. Fallacies defined, enumerated, and classed.—Review of Dr. Whately's Chapter on Fallacies.....	220



CHAPTER I.

INTRODUCTORY REMARKS.

IN reading over the elegant exposition of his views, which Dr. Whately has prefixed to his *Elements of Logic*, I felt that I generally concurred in his observations on the utility of Logic, in his refutation of the arguments of its detractors—of those who set up Common Sense in opposition to Logic,—and in his remarks on the erroneous system proceeded upon with regard to this subject in our University Education. The absurdity of comprehending, within the province of Logic, every branch of art or science to which it may be applicable, will readily be admitted by any reader ; but, on the other hand, it may perhaps appear to him that the author of the *Elements* has fallen in some measure into the opposite error of restricting too much the field of the science. This is a point, however, which will be

more properly considered when we come to the examination of the definition of Logic. At present I must devote a few pages to some observations suggested by the perusal of Dr. Whately's Preface.

The author excuses himself for censuring several of the doctrines and explanations of logical writers, and of Aldrich in particular. On this occasion he appears to me to go farther than is necessary; and, upon the whole, the commendations given to Aldrich's compendium are probably greater than the work is deserving of. However, I must now apply the same excuses to my own case. If, in the remarks contained in the following pages, criticism will be found to occupy more space than eulogium, it is not from any desire to depreciate the value of the improvements here introduced into the science, but from the consideration of the greater practical use resulting from the investigation of the matter of disagreement, than from a detailed repetition of those doctrines in which my views coincide with those expressed by the author in question. Should my remarks be deemed inapposite or incorrect, the reader may at least have been led, by their means, to form a better-grounded judgment.

In adverting to the style which he has adopted, the object stated by Dr. Whately as that which he had in view, is so strictly what should be wished, that I cannot do better than transcribe this short paragraph.

“ With regard to the style, I have considered perspicuity not only, as it always must be, the first point, but as one of such paramount importance in such a subject, as to justify the neglect” (the *comparative* neglect, I should rather say) “ of all others. Prolivity of explanation,—homeliness in illustration,—and baldness of expression, I have regarded as blemishes not worth thinking of, when any thing was to be gained in respect of clearness.” Elements—Preface, p. xxii.

Generally speaking, the result answers to the expectations raised by the above paragraph ; and, not confining himself to the qualifications which he deems to be *necessary*, he has also succeeded in combining elegance and dignity of language with that perspicuity which, on scientific subjects, has the precedence over every other qualification ; he falls but rarely into any of the three defects which he very properly describes as more than pardonable, wherever clearness would otherwise be sacrificed. If his style is in any re-

spect to be blamed, it is rather for the occasional departure from the precepts which he has thus laid down, for a disposition to wander into that elegant rhetorical confusion which is so apt to lead the reader astray, and sometimes to convey a notion (an erroneous one I have little doubt of) that the author himself has not always a very clear idea of the import of his language.

“Ornaments of style,” says he, page 146, “such as metaphor, epithet, antithesis, &c.” are “by no means necessarily adverse to perspicuity, but rather, in many cases, conducive to it.”—To a certain degree, fiction is not only conducive to perspicuity, but no discourse can be carried on without it. No operation of the *mind*, none of its qualities, nothing that has any relation to it, can, in general, be expressed but by metaphorically comparing them to those which relate to really existing objects. For ex. My mind *comprehends, retains* an idea ; my idea *on the subject* is *enlarged, restricted, cleared up, defined, &c.* All these are expressions quite as figurative, and even more so than that of a *vessel ploughing the ocean*. The mind is supposed to be a *vessel* or *receptacle*, which *comprehends* (i. e.

encloses) or *retains* (i. e. prevents escaping, keeps in confinement) an *idea*, which again is supposed to be a *real* object. Again, *idea* is supposed to be a collective term, designative of a set of real bodies ; one of these is defined to be the one which lies *upon* another body, which is called the *subject* (from *subjaceo*), and this *body lying upon another* is described as being *increased* or *diminished* in *bulk*, *cleared up* (i. e. by the removal of objects which hid it from us), *defined*, (i. e. by fixing limits to separate it from other contiguous bodies), &c.

This necessary defect in all human languages, —necessary, because it is the result of the conformation of our minds,—is the perpetual antagonist to perspicuity. Obligated to describe as real what is only *fiction*, and what the narrator intends should be understood as fictitious, he is in continual danger of seeing the idea of reality attached to it by the reader in a greater or less degree ; or still more so, of seeing the connection between the two, differently conceived by the different minds to which his discourse is directed. This is the source of most of the deceptions which prevail in every stage of human intercourse, and

this it is that renders rhetorical language so easy an instrument of delusion and erroneous persuasion. Where correct information, and consequently perspicuity in language, is the object, the greatest attention should be paid to employ, in preference to others, such figures as have, by long use, lost, as it were, their original sense ; or, where that object cannot be accomplished, to use such others as represent ideas as analogous as possible to the particular one intended. To persist in the same figure beyond the point where analogy ceases between the metaphor and its type, is directly productive of erroneous conception ; to represent the same idea by metaphors derived partly from one, partly from another source, generates confusion ; to combine figurative expressions in a manner in which the real types could not have been combined, gives to the whole an air of absurdity. Yet nothing is more common among those who, like the author of the *Elements*, are apt to give way to a general propensity for decoration in their style. I do not deny that *most* of his figures are good and appropriate ; but one is apt to be startled at meeting with such expressions as the following :

“ They *overlooked* the *boundless* field that was before them *within* the legitimate *limits* of the science.” (p. 7.)

Another instance of inappropriate figures is that of *building* a science. To “ build morals into a science” occurs in p. 223 ; and again, in p. 245, he says that a certain collection of rules cannot be “ built into a regular science.” In the latter instance I have not been able to form any clear idea of his meaning ; for it is difficult to conceive, that the knowledge of *any* collection of rules for the performance of any operation, or indeed that the knowledge of any one such rule does not constitute a portion of *science*.

A slight deficiency in point of perspicuity may also be observed in another respect. This is in the occasional entanglement of sentences, a species of confusion, the source of which may be traced to the same pursuit of elegance—a most desirable quality, one with which but few are really gifted,—but which, in a scientific treatise, should never be *opposed* to perspicuity. The long sentence on plainness, which occupies two thirds of p. 146, may serve as an instance of this defect ; and in general the long parentheses which

occur throughout the work, are the occasion of much strain upon the reader's attention.

The frequent use of the letters *i. e.* and *e. g.*, abbreviations of the Latin words *id est* and *exempli gratia*, is also productive of inconvenience to the reader. They are usually read *that is* and *for example*; words which bear no apparent analogy to their signs, in the eyes of any one who is not a Latin scholar; and, even if the reader be acquainted with that language, he must perform the additional operation of translation before he can pronounce these words. The use of these abbreviations is of old standing; but I think there might be much gained by substituting, for *e. g.* at least, the abbreviation *for ex.* now much more generally adopted.

Let not any of my own defects in style be objected against these remarks: every author is ready to detect the inaccuracies in the style of others, and to consider himself as a competent judge; but few can be convinced of those of their own writings, and this for a very plain reason, independent of all self-love: every person being necessarily more accustomed to his own arrangement of ideas than to that of any other person.

The general arrangement of the subject-matter of Dr. Whately's *Elements* appears to be well calculated to answer their professed object—first, the introducing into the field of syllogistic reasoning one who is as yet wholly unacquainted with the science, and the giving a more detailed instruction to the scholar who has already acquired some general notions. With this view, after having, in the introduction, defined the science, and dissipated in a great measure the clouds in which former logicians have wrapped the whole subject, the author proceeds to give an *Analytical Outline*, calculated to convey a general idea of the end-in-view and of the subject-matter, in as clear and intelligible a manner as can be done without entering into minute details. The several elements of the science are next investigated, and gradually put together and combined in that part which he has denominated a *Synthetical Compendium*; and the remainder of the work refers to subjects which he considers, not as appertaining to Logic, but as being so intimately connected with it, as to require the entering into some details for the purpose of exhibiting the distinctions by which they become excluded from the field.

In the Treatise which, as above mentioned, I

am preparing, I have followed a plan in some respects analogous to this one ; but, as I have extended so much further the limits of the field, and as I differ from him as to the comparative importance of its several parts, correspondent modifications will be seen in the details of my plan. Those subjects which he considers as connected only with the field, are, by Mr. Bentham, included within it ; and the subject-matter of Dr. Whately's last chapters are therefore interwoven with the rest of the treatise. On the present occasion, however, for the purpose of facilitating the comparison of our respective systems, I shall, with few exceptions, follow the arrangement adopted in Dr. Whately's Elements.

CHAPTER II.

DEFINITION OF LOGIC.

IN every treatise, whether for the purpose of elementary instruction, or for that of completing and methodizing the stock of knowledge already acquired, it is most important that the author should begin by distinctly stating his *object* and *subject*—the *end* that he wishes to attain, and the *subject-matter* on which he purposes to work. By this mode of proceeding, the reader, having in view the same end as the author, is enabled to keep pace with him during the whole course of his progress, and the author himself is the better assured of not wandering from the paths which lead to that end. Thus, in these Elements of Logic, Dr. Whately sets out by a definition of the art-and-science he treats of, according to his ideas on the subject, together with a critical examination of the extent ascribed to it by former logicians.

Though this definition be not given in that rigorous and precise manner which might have been

wished, yet the author's meaning, upon the whole, may be ascertained with tolerable clearness. He has in particular brought to view one very important fact, overlooked by all his predecessors, though so obvious, when once exhibited, as to make us wonder that it should not have been remarked: viz. that Logic is a *science* as well as an *art*. The universally prevailing error that human knowledge is divided into a number of parts, some of which are arts without science, and others sciences without art, has been fully exposed by Mr. Bentham in his *Chrestomathia**. There also it has been shown, that there cannot exist a single art that has not its corresponding science, nor a single science which is not accompanied by some portion of art. The Schoolmen, on the contrary, have, with extraordinary effort, endeavoured to prove that Logic is an art only, not a science, and, in that particular instance, Dr. Whately is, I believe, one of the first who has ventured to contradict this ill-founded assertion.

* *Chrestomathia*, &c. by Jeremy Bentham, London, 1815 and 1817, Part I, p. 8; and "Essai sur la Nomenclature et la Classification des principales Branches d'Art et Science." Paris, 1823, p. 23. The latter is a short Essay founded on the former work, and which I published in French in 1823.

Next, as to the field appertaining to this art-and-science, there is a wide difference between the extent ascribed to it by Dr. Whately and that which appears to me to be best suited to the ordinary acceptance of the word *Logic*. In the *Elements*, the science in question is restricted to mere correct reasoning, or (in the precise language adopted by Mr. Bentham) to the operation of *ratiocination*, and, yet further, to that ratiocination alone which can produce absolute conviction, viz. to *sylogistic ratiocination* or *deduction*—to the rules for the correct performance of this operation, and to that scientific knowledge of its subject-matter and object which is *necessary* for the purpose.

Mr. Bentham defines Logic to be—"that branch of art-and-science which has for its object or end-in-view, the giving, to the best advantage, to the human mind, direction, in the pursuit of *every* branch of human knowledge ;" a definition founded upon that of Saunderson—"Ars instrumentalis dirigens mentem nostram in cognitionem omnium intelligibilium."

Neither of the above definitions answer to the idea I should be disposed to entertain of the subject in question. That of Dr. Whately confines

it to matter which, of itself, appears to me of so little importance, that it may be very doubtful whether even all the eloquence he displays on the occasion, together with his practical simplification of the science, can ever bring Logic into general repute ; and, upon some occasions, he may perhaps himself be found to have used the word in a more extensive and, at the same time, more ordinary and less obnoxious sense. Mr. Bentham's definition, on the other hand, might be so construed as to comprehend every other branch of art and science ; thus rendering Logic synonymous to universal knowledge. In the endeavour to avoid these opposite defects, I had defined Logic to be—"the branch of art-and-science which has for its object the advantageous application of the human mind to the study of any other branch of art-and-science."

If accurately analyzed, it may be found that this definition cannot infer the extension of the science to any spot which is the exclusive domain of any other branch, but to such only as are common to *all*. It does not imply "such a system of universal knowledge as should instruct us in the full meaning or meanings of every term, and the truth or falsity,—certainty or uncertainty,

—of every proposition, thus superseding all other studies ;” but relates merely to directions for attaining and transmitting any such knowledge or instruction. It does not refer to *particular* subjects, but to such modes of proceeding as are *universally* applicable to art-and-science, whatever be the subject-matter in question.

In Dr. Whately’s preface, p. x, the subject of Logic is supposed to be expressed by the answer to the question, “What is the most appropriate intellectual occupation of Man *as* Man ?” meaning, as it is evident from the subsequent development of the question: what is the universal occupation of man (as distinguished from brutes), whatever be his particular pursuits? The author answers, “Evidently in Reasoning.” I should say, “In the exercise of his intellectual faculties.” Knowledge, it is true, cannot be made use of unless belief be attached to it; and the producing that belief is certainly one of the important operations of the mind; but it does not constitute the whole of that universal occupation which distinguishes man from brute—which constitutes the *Animal rationale*. Has any one of the brute creation been observed to *define*, for instance, or to class objects under

genera and species?—or are these operations less universally applicable than the deduction of a conclusion from two premises?”

On this occasion, one might be led to suppose that the author had fallen, in some measure, into the error with which he very properly reproaches Locke—that of confounding *reason* with ratiocination—reason in its ordinary sense (viz..that use of the mental faculties which distinguishes man from other animals), with ratiocination as above defined (that is, the process of deducing or inferring one proposition from one or more others). Thus it is that he probably considered that man, *as* man, is endowed with *reason*; therefore *reasoning* is the characteristic operation performed by man*.

But Logic is to be still further restricted. It is not to the whole field of ratiocination that the word reasoning is to be applied; but it is henceforth confined to syllogistic argument, of which mathematical argument is a species. It is true that this alone can, strictly speaking, produce absolute conviction: but how few are the cases

* This is a fallacious argument, referrible to the head denominated hereafter, Fallacy of Paronymity. See Ch. xi.

where such reasoning can be put in practice? How much are we not, every day, every moment of our life, obliged to reason by *analogy*, for instance? The latter species of reasoning is indeed more subject to fallacy than any other: there is no test to prove *absolutely* that any one argument founded on analogy is *not* fallacious; but, is that a reason for discarding it altogether from the field of ratiocination? If we cannot prove, otherwise than by analogy, that food will satisfy our hunger, should we therefore dispense with food? The force of each *particular* argument is founded, it is true, upon the nature of the *particular* observations made with relation to it, and is therefore the subject-matter of the *application*, not of the *science* of Logic; but, so much of the mode of operation as can be abstracted from particular cases, in this case, as well as in that of syllogistic reasoning, is assuredly contained in the answers to the above-mentioned question, and is therefore equally entitled to be classed under the head of Logic.

But moreover, reasoning, whether deductive or inductive, is not the only universal intellectual occupation of man. Whatever be the subject-matter of his thoughts, in order to derive any degree of advantage from them, he must be able

to learn and to retain the ideas of others, and to communicate his own,—and, in order to derive the greatest possible advantage from them, he must be able to *improve* them; that is, to form in his own mind *new* combinations, wherever such combinations may be usefully made; for when will the time come when any man may be assured of having arrived at perfection on any one subject? All general rules for accomplishing these several purposes, that is, all such as are independent of any particular subject-matter of knowledge, form, in my idea, an independent branch of art-and-science—one which should be entered upon and studied separately, by all who intend to devote their time to scientific pursuits—one of which the practical rules are afterwards applicable with the greatest possible advantage to every art and science, and without which, in a greater or less degree, no one can be studied with an adequate use. To this aggregate branch, I have given the name of *Logic*; and, among the subdivisions of its field, I include ratiocination, both deductive and inductive—one of which alone constitutes Logic, according to Dr. Whately's idea. Other authors again have still more extended or restricted the sense of this

word, but in too vague a manner to render any explanation necessary on the present occasion. As to which of these several subjects should be definitively regarded as the matter of Logic, this may be admitted to be a "mere verbal question, relating to the extension, not of the science, but of the *name*." (Elements, p. 250.) But, do not let us confound together the whole with its part; do not let us, for the sake of a word, refrain from dispelling the thick cloud which darkens this spot,—at a time too, when, in physical science, it is thought advantageous to overwhelm us with a deluge of hard words on the most insignificant subjects.

If there be a reason for applying any denomination, become vague and indeterminate by long and ever-varying use, to one of its senses more than to another, it is in favour of that sense in which its use is at once the most ordinary and the most appropriate*. And this, I think, is the case with the word Logic, as applied to

* Even those Logicians who confine the science within the narrowest limits, though they avowedly exclude every thing but ratiocination, yet, in their treatises, *definition*, *method*, &c. are touched upon, although it be but slightly. Dr. Whately, as will be seen, has, as well as others, a section on each of these subjects.

the extended sense above alluded to; and to this one therefore I should attach it;—not including any application of the science to particular purposes,—but merely the general abstract part of it,—like Mathematics, which treat only of such general abstract properties of form and quantity, as are always the same, whatever be the nature of the subject-matter. If the above definition of Logic be not adopted, I should propose the total suppression of the word, on account of its continued misuse. The general science might then take the name of *Noology*, given to it by Mr. Bentham; and the particular operation of reasoning, that of *ratiocination* (to avoid the confusion of *reasoning* with *reason*); this operation would be subdivided into *deduction* or syllogistic ratiocination, and *induction* or analogical ratiocination.

A clearer idea may perhaps be obtained of the extent of the field of Logic or Noology, as I have defined it, by the following enumeration of the several topics of which it may be said to consist.

1. Exposition of the *object* or *end-in-view*, viz. the advantageous application of the human mind to the study of any branch of art-and-science.

2. Analysis of the *subject-matter*, viz. the human mind, with the classification and description of its several *powers* or *faculties*.

3. Exposition of the *means* by which the subject-matter may be applied to the object. These are—1. The transference of knowledge, comprehending, on the one hand, *learning*, on the other, *teaching*, either *narrative* or *probative*, to the exclusion of *excitative* communication, which belongs to Rhetoric; 2. The improvement of knowledge, including self-teaching.

4. Analysis of the operations performable with relation to those means, and rules for their due performance. These operations are—1. Exposition in all its various modes; 2. Methodization, including perhaps observation, generalization, &c.; 3. Induction; 4. Deduction.

5. Analysis of the *instrument*, viz. Language. This includes the theory of Universal Grammar, in as far as it relates to the process by which our thoughts are expressed, and the *order* and *modes* in which such process is best suited to its object.

In the hasty review of the several writers, ancient or modern, who invented, or have since made any important changes in, the system of Logic, Dr. Whately omits to mention any of the

commentators or editors of the Aristotelian system in modern times; but, in the course of the work, it is to Aldrich's Compendium which he commonly refers. There is a work, however, by Bishop Saunderson, which was commonly in use at Oxford in the middle of the last century, and which appears to me to be superior to those which have been more recently published. It contains, indeed, the usual superfluity of nomenclature and of systematic ingenuity which characterizes the Aristotelian syllogisms; but, upon the whole, it is drawn up in a comparatively clear and methodical manner. It was this work which originally suggested to Mr. Bentham his new ideas on the subject; and it is to this treatise in particular that I shall refer, whenever I have occasion to speak of the Aristotelian system.

CHAPTER III.

ANALYTICAL OUTLINE.

(Whately's Elements, Ch. I. p. 18.)

THIS chapter of Dr. Whately's is a very useful one to beginners. By thus giving them a general idea of the subject-matter before the entering into any details, the author is enabled more readily to point out, as he goes on, the use of those details and their connection with the object in view. As, however, this has only reference to beginners, every rule and principle being repeated in the *Synthetical Compendium*, and as, upon the whole, this part of the *Elements* appears to be well drawn up, I consider it as needless to enlarge upon the subject at present; but shall merely have to make a few observations relating chiefly to some errors of detail, which, though small in themselves, may be productive of much misconception in their results. To these observations I shall add, as a necessary preliminary to the science of Logic, a general classifica-

tion of the various subject-matters of thought and discourse.

The author's remarks on the ambiguity of words, and on the very great degree in which it may contribute to fallacy in argument as well as in conception, are, generally speaking, just and appropriate ; but, in some cases, he has not been very happy in clearing up this ambiguity. He adverts (Analytical Outline, p. 25,) to that of the words *because* and *therefore*, which denote, sometimes the connection of premises and conclusion (a species of connection of logical subalternation), sometimes that of cause and effect. As an illustration, he gives the example, "Yonder is a fixed star because it twinkles." This is a good example of a connection of subalternation ; but, when he reverses it to this form, "It twinkles because it is a fixed star," he fails in giving an instance of the relation of cause and effect. A star does not twinkle *because* it is fixed, any more than it is fixed *because* it twinkles. The relation, in this case, as in the former, is that of logical subalternation exhibited in another form. This example is the more unhappily chosen, as no philosopher has as yet ascribed a plausible *cause* for the twinkling of a star. If he had

said, "I no longer see the star, because a cloud is interposed between it and my eye," this would have been an apt illustration of the use of *because*, expressive of the connection between cause and effect.

And here I may advert to another kind of inexactness which frequently occurs. Though he has expressly confined the first part of his work to deduction or syllogistic reasoning, he is continually trespassing on the field of induction, as in this same page (26), in the use of the word *proof*. Here he plainly refers to inductive proof (which, not producing certainty, can scarcely be called proof), as well as to syllogistic. The former alone is applicable to future events, or indeed to any particular class of events. The principle, that syllogisms are entirely independent of the subject-matter, is one of those which he lays the most stress upon throughout the book.

Of the whole system, that part, which he has left the most confused and least intelligible, is the theory of the "distribution of the middle term ;" and that, in a great measure, from the ill-chosen fiction made use of. The word *distribution*, it is true, is the one used by Latin logicians for this purpose, and may, in that language, have been, for

ought I know, very appropriate ; but this is no reason for transferring it to our language in that sense, when it already has acquired a totally different one, and *that* in very common use. Because a figure is used in one language, it does not follow that it must be translated into another by the same figure. Should we have to translate the French expression, “ *Ces hommes sont utiles dans le rapport de leur puissance,*” should we say, “ *These men are useful in the report of their power?*” or translate into French, “ *He visited his relations,*” by the words, “ *Il visitases relations?*” Dr. Whately has undertaken to divest Logic of all those technicalities which have hitherto rendered it so formidable to students as compared with its use—to render its study easy and its language familiar. For this purpose he has translated the *precepts* and *rules* into our own language. He should also have translated the *words*, and thereby avoided the misconstructions that *distribution*, *necessary*, *particular*, &c. are liable to, in the cases where he uses them.

Distribution, in English, applies only to a *number* of objects, either physically placed into compartments ready to receive them, or fictitiously ranged under the several classes to which

they belong. Logicians call the distribution of a term the saying that it is meant to be applied to a *whole* class, (or to *every* object contained in a class, according to the sense in which you take the word *class*), and not to one part only of the class. When a man has had frequent occasion to use the word in its former sense, what time, what labour, what efforts does it not require to accustom his mind to the latter one! As for myself, long as I have been acquainted with this logical sense, I own that it still puzzles me on every occasion.

Would not the words *universal* and *partial* answer the purpose? they are not as appropriate as one might wish, but they are better at any rate than *distributed* and *non-distributed*; for, at least, they convey no perplexing or erroneous ideas. "A term is distributed," says Whately, "when it is taken universally, so as to stand for every thing it is capable of being applied to," and consequently undistributed when it stands for a portion only of the things applied to it. Here, in my opinion, is as good a definition of *universal* and *partial* as could easily be given. Substitute these adjectives to the above-mentioned parti-

ciples wherever they occur, and you will dissipate no small part of the confusion which still predominates in this part of the Elements.

Referring to p. 77, the words “*universal* and *particular* (or partial)” are there applied in this same sense to propositions ; and the *being universal* or *particular*, is called the *quantity* (or *extent*) of these propositions. I do not see why the same locutions might not have been applied to the *terms* also of a proposition, and thus have obviated the confusion above alluded to. But here again I cannot approve of the *anglifying* the Latin words instead of translating them. Dr. Whately himself has perceived that *extent* is in this sense the translation of *quantitas*, and *partial* that of *particularis* : then why persist in saying *quantity* and *particular*,—in speaking Latin disguised under an English mask, rather than plain, honest, intelligible English ?

Some inaccuracy is also perceptible in the syllogistic formula which he mentions here—an inaccuracy resulting from the confounding in general the substantive with the adjective form of the predicate, and the not defining its extent in the case of the former. But, as syllogisms are

but slightly touched upon in this chapter, I shall refer these considerations to the time when we come to their detailed explanation.

The remainder of this Analytical Outline is devoted to the definition of the processes of abstraction and generalization, which are here very aptly distinguished, and to the very useful exposure of the common error of ascribing reality to generic terms. This should have been carried still farther; he should have exhibited the pernicious effects resulting from the *realization* of those subject-matters which D'Alembert first called *êtres fictifs*, and which Mr. Bentham has described under the name of *fictitious entities*. He should have pointed out the constant but unavoidable *fiction* which must enter into the composition of any discourse, and should have given some indications by which error, in this respect, may be guarded against. To give, in as few words as possible, a general idea of Mr. Bentham's view of the matter, I must devote a few pages to the general classification of Entities. This subject does not strictly belong to the field of Logic, but rather to that of Ontology (commonly called Metaphysics). It is, however, so important for the logical Scholar to bear

in mind the leading principles upon which that classification is founded, that I have introduced a chapter of considerable length on this subject, in the Treatise on Logic to which I have already adverted.

In that work, the word *Entity* and some of its species being incidentally explained in the course of the chapter on the Mind and its operations, the general systematic *exposé* is deferred till the end of the work; as it there serves as an exemplification of the rules of exposition and methodization. On the present occasion, I have thought it more advisable thus to introduce the subject at the outset, as my object is only to enable the reader to comprehend any references I may have occasion to make to the leading classes of entities.

I have said, that this classification is Mr. Bentham's; and so it is with regard to the most important heads; but it had not been completed by him; several of the subdivisions and other details have here been added, and, in many cases, I have thought it advisable, with reference to the present purpose, to make some alterations in his system. In other instances, I have been obliged to stop far short of the point to which he

had carried the operation, considering that any further details would be irrelevant to the present purpose.

The word *Entity* is that most extensive and all-comprehensive term, which is used to designate every subject-matter of perception, thought, or discourse,—every *being*, every *thing*, every *operation*, every *property*, whether real, abstract, or fictitious, whether reckoned as certain, contingent, or impossible, by any mind, at any time, in any place. Every noun-substantive,—every substantive expression, in any language, is the name of an *Entity*.

Entity being therefore the most extensive term that can be imagined, it has no superior genus, and cannot be defined *per genus et differentiam**. Enumeration is the only mode by which the word can be expounded, and is the one which I have attempted. If the above enumeration be not all-comprehensive, if there can be imagined any one thing which be not comprehended in it, it is incomplete, and consequently the exposition incorrect.

Entities in general may be referred to the

* See hereafter, Modes of Exposition, Ch. vi.

following classes; or, in other words, the sum-mum genus *Entity* may be divided as follows.

I. A *real Entity* is one which has physical existence; that is, one which is perceptible by means of any of our *senses*, as a *rock*, a *star*, a *man*, &c. A real entity must therefore be an *individual*, or a *collection* of individuals *definite* in number, as a *landscape*, an *army*, a *man on horseback*, &c. But, if by these expressions, a particular *class* be meant, they are no longer names of real, but of *collective* entities, of which mention will presently be made.

II. An *inferential Entity* is one which we believe to have real existence, but which is imperceptible to any of our senses; such is, in relation to every man, the Divinity he worships; such is our *mind*, or the *thinking part* of our frame.

III. A *fabulous Entity* is one which has been believed in by others, but to the existence of which we attach no belief. Such are, with relation to us, the Heathen Gods, which were inferential entities with relation to those who believed in them. Between real or inferential and fabulous entities there is no distinct line of separation, even with relation to one indi-

vidual mind, as belief admits of every degree from *positive* to *negative* certainty.

IV. A *collective* Entity is the result of the operations of abstraction and generalization. Certain properties possessed by one entity, or by several entities in common, are abstracted from all other properties which those entities may happen to possess, and an indefinite number of individuals are imagined as being all endowed with those abstracted properties; these individuals form a *class*, and are designated collectively by a *common name*. Every *common name* is therefore the name of a *collective entity*, —of an indefinite number of individual entities considered with respect of certain properties common to all the entities so *contained* in the class. Where those entities are *real*, the class which contains them is a *physical* collective entity; where they are *fictitious*, the corresponding collective entities are also *fictitious*.

V. A *fictitious* Entity is one which neither has, nor is supposed to have, any real existence, but which is grammatically spoken of as real. We say: colour *is* a property, benevolence *is* a quality; and yet we do not suppose that *colour*, *property*, *benevolence*, or *quality*, are

really existing objects. These four words are therefore names of fictitious entities.

Fictitious entities, as well as real, are referrible to classes, which classes may be termed collective fictitious entities. Fictitious entities are individualized by referring them to real objects ; as, for example, the *colour of that object, that man's benevolence*.

As to the subdivision of these several heads, it is only in regard to real, and to fictitious entities, that it appears to be necessary on the present occasion.

In the case of real entities, the summum genus is commonly designated by the word *matter*, which may be divided into *bodies* and *substances*, according to whether the individuals referred to are or are not, for the particular purpose in view, supposed to be limited in configuration. Thus, *man, tree, house, &c.* are names of classes of bodies,—*metal, bone, flesh, &c.* are names of classes of substances.

These two genera, *bodies* and *substances*, are susceptible of regular and distinctly-characterized divisions and subdivisions, which may always be rendered *all-comprehensive*; that is, such as that, when taken together, they shall comprehend

every conceivable real entity. Such an operation, however, is foreign to the present purpose, being the subject-matter of physical science.

But fictitious entities can by no means be so easily reduced to order. The vague and indefinite nature of the operation of *fiction* renders the classification of its results a very arduous task. In the following sketch, I have endeavoured to refer them to a few general heads; but, such is the difficulty of bringing them under all-comprehensive genera and species, that, in some instances, it will be found that the lowest species here mentioned, must, for the purpose of exposition or ulterior division, be considered as *summa genera**.

I. Physical fictitious entities are such as relate to real individuals.

A real individual may be considered as being either in *motion* or at *rest*. Thence the division of physical fictitious entities into *motions* and *states* of things. Physical *actions* and *operations* are species of motions more or less complicated.

* Such are, for example, some of the jurisprudential fictitious entities, here classed under the head of Immediate Results of Political Operations.

States of things or *properties* may be divided into *absolute* and *relative*. The absolute properties of a body are such as have place independently of any other body, and consist in the effect which that body produces upon our mind. The relative properties of a body are such as result from its comparison with another body.

The summum genus of absolute properties is *existence*. Its division may be founded on various principles or sources. Thus, for example, we may divide Existence:

1. According to the degree of belief attached to it, into *certainty**, *contingency* in its various degrees, *impossibility*, &c.;

* All the substantives given as examples under this head of *states of things* or *properties*, are to be reckoned as names of properties. Some of them are commonly used in other senses also; as, for example, *organization*, which means either the operation of *organizing* or the property of *being organized*. It is in the latter sense that it is here to be understood. This is an imperfection in language much to be regretted, but which, I fear, cannot be easily remedied.

There are, in fact, but few instances, comparatively speaking, where there is a substantive in use for the designation of properties; and, on many occasions, it might not even be desirable to make use of it, should it exist. Thus ~~the~~ *adjective* is a very common and a very useful abridged form; as, for

2. According to the degree of perceptibility by any one of our senses, into *presence* and *absence* (that is, the being within or without the reach of any of our senses), in respect either of *place* or of *time*, or of both. *Absence*, in respect of place, may be subdivided into *attainability* (the property of being susceptible of becoming within reach), *unattainability*, &c. A corresponding division of absence, in respect of time, is into *past* and *future*;

3. According to the particular *sense* by means of which the properties are perceived. Thus—1st, by the sense of *sight* we perceive *colour* and its species, *opacity* and *transparency*, &c.; 2dly, by the sense of *hearing* we perceive

example, when we say that an object is *red*, we mean that it is endowed with *redness*, a species of absolute properties. If we say that it is *large*, we refer to *largeness*, a species of relative properties. Sometimes properties are designated in the *verbal* form; as, for example, he *can move*. By this expression is understood, that *he* is endowed with that species of absolute properties which cannot be substantively expressed otherwise than by some such hard word as *locomoveability*. The words *before*, *behind*, *above*, *below*, are examples of relative properties expressed in the adverbial form. That language is the most convenient for use, in this respect, which enables the writer to choose, on each occasion, that form of expression which is best suited to his particular purpose.

sound and its species; 3dly, by that of *tasting*, *taste* and its species; 4thly, by that of *smelling*, *smell* and its species; 5thly, by that of *feeling*, either alone or combined with that of *sight*, we perceive *form* and its species; *quantity*, *number*, and *size*, and their species; *consistence* and its species, such as *solidity*, *fluidity*, *gazëity*, &c. &c.

4. According to the intrinsic nature of the properties, into *organization* and *inorganization*, *animation* and *inanimation*, &c. *Animation* comprehends all the physical *powers* or *faculties* which are all absolute properties.

Relative properties or *relations* may be referred to the following heads:

1. Relations of *contiguity* and *distance* in place. *Propinquity* and *remoteness* are degrees of distance. These relations may also be subdivided into *inherence**, *exclusion*, the properties of being relatively *above*, *below*, *behind*, *before*, &c.

2. Relations of *simultaneity* and *succession* in

* By *inherence*, it is understood that one body is a *part* of another. Absolute identity in place cannot exist (in regard to real entities, to which alone, it must be remembered, these properties relate,) without reference to succession in time, and therefore belongs to the head of relations of time and place combined.

respect of time. *Coexistence* is simultaneity; but generally implies *duration*, which also belongs to this head. To *succession* may be referred *previousness* and *subsequentness*, *propinquity* and *remoteness* in time.

3. Relations of time and place combined. Succession in time may be combined with identity, contiguity, or distance, in place. Simultaneity can only be combined with contiguity and distance in place.

4. Relations independent of time or place, viz. relations of *identity* and *diversity*. *Similitude*, *dissimilitude*, and *opposition*, are degrees of diversity. These relations are susceptible of all or nearly all the several divisional operations which are above performed on absolute properties.

II. Tactical fictitious entities. These entities belong to the class of relations, and are commonly termed relations of subalternation. Such are the relations of *genus* and *species*, of *subordination*, *superordination*, *coordination*, &c.

III. Noological fictitious entities. They consist of such as relate to the intellect. To this head may be referred,

1. The *absolute* properties of the mind, viz.

its *powers* or *faculties*, of which an enumeration is attempted below in Ch. IV.

2. The *relative* properties of the mind, such as *intensity* of its faculties, *sanity* and *insanity* of the mind, &c. But whenever any expression of approbation or disapprobation is conveyed, it does not belong to this head, but to a species of ethical fictitious entities.

3. The several *operations* performable by means of these faculties, which operations are also exemplified in the course of the following pages.

4. The immediate *results* of these several operations, viz. *impressions* and *ideas*, with their several species, simple or combined.

IV. Pathological fictitious entities, which relate to the sensitive mind. These are denominated *sensations*, and comprehend *pleasures*, *pains*, and *neutral sensations*. Pleasures and pains have been subdivided into fourteen heads by Mr. Bentham, in his Table of the Springs of Action.

V. Ethical fictitious entities, or such as relate to *desire* and *will*, that is to the *desiring* and *volitional* mind. These may be classed under the following heads :

1. Properties of the desiring mind, or *desire*, and its species. With relation to any event or object, *desire* may be divided into *positive desire* or *hope*, and *negative desire* or *fear*; and either of these may be subdivided according to its *object*. Thus, *hunger*, *thirst*, *ambition*, *curiosity*, &c. are species of desire, distinguished by their respective objects, viz. *solid food*, *liquid food*, *social preeminence*, *acquirement of knowledge*, &c.

3. *Motives* for ethical operations; a species of entities, intimately connected with the preceding, but which are distinguished by the additional intimation of the relation they bear to operations.

4. *Ethical operations*, which are either *moral*, such as *approbation**, *vituperation*, *entreaty*, *refusal*, &c.; or *political*, such as *command*, *empowerment*, *obligation*, *punishment*, &c.

5. Immediate *results* of ethical operations. Such are, 1, with relation to moral operations, *neutral*, *laudatory*, and *vituperative* qualifications of fictitious entities, viz. *reputation*, *virtue*,

* By these words must be understood, on the present occasion, the *operations* of approving, blaming, entreating, refusing—commanding, empowering, obliging, punishing, &c. not any *results* or *effects* of those operations.

and *vice*, with all their several species ; 2, with relation to *political* operations, *command*, *obligation*, *right*, *power*, &c.

6. *Ethical relations*. Such are *society* and *conditions* in life, *moral* or *political*. Moral conditions are those of *friendship*, *inimity*, &c. Political conditions are, *trades*, *professions*, *situations*, *places*, *offices*, &c.

This last head comes very near to that of physical relations ; it differs in this, that it is not by the perceptive, but by the conceptive faculty, that they are attached to the idea of the persons to which they relate. A barrister, for ex. is not perceptibly different from a solicitor, like a tall man from a short one. *Barristership* and *solicitorship* are ethical fictitious entities ; *tallness* and *shortness* are physical fictitious entities.

The farther subdivision and classification of these several heads of entities,—the completing the several enumerations of species,—the characterizing these species by *expositions*,—are operations which would no doubt be attended with considerable advantage ; but they are irrelevant to the present purpose. The classification of physical entities belongs to *Physiology*, (comprehending *Natural History* and *Natural Philosophy*, in the ordinary

sense of these words) ; that of pathological entities to *mental Pathology* ; that of ethical entities to *Ethics* (including *Morals, Politics, Jurisprudence, &c.*). Logic relates to noological entities alone, and with regard to this class, some attempt at methodizing and expounding them will be made in the following pages. What I have thought necessary to say of the others, was merely with a view to render myself intelligible, whenever I have occasion to speak of the general classes to which I have referred them.

CHAPTER IV.

INTELLECTUAL FACULTIES.

(Whately's Elements, Ch. II. Synthetical Compendium,
Part I. p. 54.)

WE now come to Dr. Whately's second chapter, or Synthetical Compendium, which he considers as a concise, regular, and systematic arrangement of the details of the science, for the use of those who have already made some progress in the study. Its object is to make the student thoroughly acquainted with every part of the subject, so as that he may retain, compare, and apply to use every idea which may be therein elicited. Such is evidently the author's intention, as implied in the exposé of his plan at the close of the introduction. Whether this intention has or has not been fulfilled—whether the expectations raised in the reader's mind, by the merits of the preceding Analytical Outline, have or have not, in this instance, been realized,—is the subject of the present investigation. The

result, I fear, as to completeness at least, may not be found so satisfactory as might be wished.

This chapter of the Elements is thus divided :

Part I. Of the Operations of the Mind, and Terms.

§ 1. Operations of the mind.

§ 2 and 3. Terms.

§ 4 and 5. Generalization and its result.

§ 6. Division.

§ 7. Definition.

Part II. Of Propositions.

Part III. Of Argument.

The comparative importance I am induced to attach to the several subjects, differing in many respects from that which Dr. Whately has attributed to them, I have been obliged to alter in some respects the above arrangement. Thus, this present chapter (IV) relates to the *intellectual faculties*, enumerated by him in Part 1, § 1, and incidentally in § 4 and 5.

My Chapter IV, on *Terms*, refers to Dr. Whately's Part I, § 2 to 5.

My Ch. V, on *Exposition*, to his Part I, § 7, *Definition*.

My Ch. VI, on *Methodization*, to his Part I,

§ 6, *Division*, and to that part of § 5 which relates to *Classification*.

My Ch. VII, on *Propositions*, to his Part II, with the exception of the two last sections.

My Ch. VIII, on *Deduction*, to his Part III, with the addition of sections 3 and 4 of Part II, and of his Supplement on Model Syllogisms and other Arguments.

Dr. Whately's Ch. III, on *Fallacies*, is here deferred till after the theory of *Induction*; which latter operation is the subject matter of my Ch. IX, and answers, in some measure, to his *Dissertation on the Province of Reasoning*.

OPERATIONS OF THE MIND (Whately's Elements, Ch. II, Part I, § 1, p. 54). Their enumeration, in as far as they relate to argumentation, opens the Synthetical Compendium. On this occasion I must quote the author's words.

"There are three" (meaning, of course, *only* three) "operations of the mind which are concerned in argument: 1st. Simple Apprehension; 2d. Judgment; 3d. Discourse or Reasoning." And, in a note, he says, "Logical writers have in general begun by laying down that there are, *in all*, three operations of the mind (*in universum tres*): an assertion by no means incontroverti-

ble," as will be shortly seen, "and which, if admitted, is nothing to the present purpose: our business is with *argumentation*, and the operations of the mind implied in that; what others there may be, or whether any, are irrelevant questions."

As to this assertion, I cannot exactly concur in the author's opinion. In the first place, I should think, that even argumentation cannot be carried on without making use of *all* the simple faculties of the mind; that *attention*, *memory*, and *abstraction*, to go no farther, are equally necessary with the three which he enumerates. And secondly, I have already stated, that I do not consider argumentation alone as constituting the science of Logic; but that I also include exposition, methodization, and other intellectual operations. For these purposes, it is necessary to be acquainted, in as far as possible, with *all* the powers or faculties of the intellectual mind.

In the same note, the author proceeds to say, "The opening of a treatise with a statement respecting the operations of the mind universally, tends to foster the prevailing error (from which probably the minds of the writers were not exempt) of supposing that Logic professes to

teach 'the use of the mental faculties in general:'—'the right use of reason,' according to Watts."

In one sense of the word, I fear that I must admit that my mind is "not exempt from this prevailing error;" for I certainly suppose that Logic teaches the "use of the mental faculties *in general*,"—that is, *so much* of their use, as is applicable to *any* branch of art-and-science, whatever may be its subject-matter. By this limitation, I hope to avoid the threatened danger of "intruding into the province of Natural Philosophy." When logical principles are once generally laid down, they *may* indeed *afterwards* be applied to any one art-and-science—to Ethics, to Physiology, or to any other; but it is this *application*, not the *general* theory, that has been improperly ascribed to Logic, in the same manner as if the application of Mathematics to Astronomy were considered as belonging to Mathematics, not to Astronomy.

I shall now proceed therefore to the enumeration of the intellectual faculties, founded on the general view given by Mr. Bentham in *Chrestomathia*, p. 143 (*Essai*, &c. p. 35), with some few alterations suggested by a closer investigation of the subject. And, in order to establish the

precise distinction between the intellectual and volitional faculties, I must first extract from Mr. Bentham's MSS. a summary view of the human faculties in general.

By *human faculties*, I mean all those properties which are either the *result*, or the *characteristics* of human life—the result, if, by *life*, we understand the *cause* of the phenomena that take place in the human frame—the characteristics, if *life* be taken for the aggregate of those phenomena.

These faculties are either *physical* or *psychical*. The physical are those of which the action is perceptible by our senses; that is, which take place in our body: the psychical, those which take place in our mind (taking this word in its most extensive sense), and of which, therefore, the action is imperceptible to our senses. The study of the nature and operation of the physical faculties of the human frame belongs to that portion of Zoology which relates to Man.

The psychical faculties may be divided into *original* and *derivative*.

The original psychical faculties are *desire* and *will*; these are denominated *original*, because it is their successive operation that produces that of

the *derivative* faculties, whether bodily or mental. The ethical sciences (moral and political) relate entirely to the nature and operation of these two faculties.

The derivative psychical faculties may be considered as either active or passive. The active, as well as the passive, when unconnected with any idea of pleasure or pain, are usually comprehended under the name of *intellectual faculties*, and constitute that which is generally denominated the *mind*, or, more properly, *intellect*, when *mind* is taken in the more extended sense I have formerly alluded to. These faculties alone belong to the province of Logic. The passive faculties, or *sensations*, when connected with pleasures and pains, appertain to mental Pathology.

The following enumeration of intellectual faculties may perhaps be yet incomplete: the analysis of what passes within ourselves is so difficult an operation, that I fear much that some of the more simple ones may not be found sufficiently distinct; and, as to the more complicated ones, new combinations might very possibly be made, and corresponding faculties might be added to this list. Those, however, which I

have here inserted appear to me to be all that are brought into practical use.

The intellectual faculties, I have said, are either *passive* or *active*.

I. The passive faculties are :

1. Perception,—as communicated to the mind by the immediate operation of the *senses*, or of physical faculties. The result of perception is an *impression*; that of the operation of any other intellectual faculty is an *idea*.

The difference between an impression and an idea may be illustrated by the following example: place an object before your eyes; as long as you see it, you have an *impression* of it; take your eyes off it, there remains in your mind the *idea* only of that object.

2. Conception,—differing from perception in this, that it is communicated to the mind by the immediate operation of intellectual, not of physical faculties. If I *see* a horse, I receive an impression of it by means of the perceptive faculty. If the word *horse* be *mentioned* to me, I entertain a corresponding idea by means of the conceptive faculty. Suppose I read the word *horse* in a book, I *perceive* so many black marks, I *conceive* the idea of a horse. Perception is applicable

only to real individual entities: conception is unlimited in its field; it is applicable to any entities of any class whatsoever.

Conception is designated by Dr. Whately (in imitation again of the Latin) by the name of simple apprehension. He had better have adopted that of conception, which he inserts in a parenthesis, by way of explanation. Apprehension, in England, is usually expressive of fear; but conception is more generally used in the sense here given to it.

The division of simple apprehension into *complex* and *incomplex* does not appear to be in strict conformity to the rules of logical division. What does simple mean, if it be not synonymous to incomplex? and, in that case, what is to be understood by dividing that which is simple into that which *is* and that which is *not* simple? The fact is, that every conception of any really existing object is complex; that of a man, just as much as of a man on horseback; for each of these is composed of a great number of simple conceptions. A simple conception is that of a single property, that of a colour, for instance, without those of form, of extent, or any other: it is the result of an operation of the abstractive faculty.

Has not the author of the Elements, in this instance, been led astray by words? Does he not consider as simple, an idea expressed by a single word, and as complex, one which is expressed by several words? For I see no other distinction, in point of complexity, between the idea "cards" and "a pack of cards;" "man," "horse," and "man on horseback." In order to entertain the idea "cards" in the plural, we must conceive a certain number placed in a certain relative situation,—a bundle, or a heap, or some such collection of cards; and is either of these less complex than a "pack of cards?" In like manner, as a man on horseback is composed of two separate individual objects, placed in a certain relative situation, so is a man composed of a head, neck, body, and limbs; all of them separate individual objects, placed also in a certain relative situation.

3. Passive Memory,—closely allied with active retention. To this head may be ascribed the faculty of mental *habit* (*habitude* of French logicians), more or less of which is displayed in dreams, involuntary thought, &c.

II. Active intellectual faculties. The denominations by which they are here designated are,

universally, the names of the corresponding operations; for our language does not afford single-worded substantive appellations for the faculties themselves. When occasion may require that they be distinguished from the operations, it may be done by changing the termination *tion* into that of *tive*, and by adding the word *faculty*; as, for example, abstraction—abstractive faculty.

4. Attention—the giving force and duration to the exercise of any one or more of the other intellectual faculties.

5. Retention. If this be distinct from passive memory, it may perhaps be the combination of that faculty with attention.

6. Judgment. This word must not be here understood in the sense in which Dr. Whately makes use of it. His operation of Judgment is what is here denominated comparison; at least the first part of it, viz. “the comparing together in the mind two of the notions (or ideas) which are the objects of apprehension.” The pronouncing that they agree or disagree is, indeed, one occasion on which the judicative faculty is called into exercise; but it is only one. Judgment usually pronounces either the degree of *belief* attached by our intellectual mind to,—

or the degree of pleasure or pain produced in our sensitive mind by,—an impression or an idea. It is an instantaneous operation which accompanies, and forms part of, that of every other intellectual faculty. It is *affirmative*, *negative*, or *contingent*. Each operation of this faculty, if expressed, is a *proposition*; the portion of language, by means of which it is expressed, is a *sentence*.

7. Comparison—is the alternate application of attention to two separate impressions or ideas, with a view to pronouncing a judgment upon the several relations which they may bear to one another,—relations, for instance, of identity and diversity in time, place, or state, or as to dependence of cause and effect, or of logical subalternation, &c. &c. These several relations have been further detailed in the general classification of entities at the end of Ch. III. of this Outline.

8. Deduction—the deducing a proposition from two others,—a *conclusion* from two *premises*. This is what logicians designate by the term *reasoning*, or, more correctly, by that of *argumentative* or *syllogistic* reasoning; the expression of the operation at full length, and in a regular form, being termed a *syllogism*.

Dr. Whately's definition of reasoning upon this occasion does not appear to me either correct or conformable to those which he gives elsewhere. Here he speaks but of one premiss—"Reasoning (or discourse) is the act of proceeding from *one* judgment to another founded upon it (or the result of it)." This may be applicable to his conversion of propositions*, (which I have termed "a deductive operation, consisting of two propositions only"); but, certainly, not to his syllogism as defined, p. 88. And the addition, in the form of a synonym to *reasoning*, of the word *discourse*, only tends to confuse the mind, as it refers to an operation totally different. This is another instance of devotion to Anglo-Latin words in preference to plain English.

9. Abstraction—the isolating a simple idea from all others connected with it,—the considering separately a single property possessed by one or more entities, to the exclusion of any others which those entities may happen to possess. Thus the idea *redness*, for instance, is the result of an operation of the abstractive faculty. The property of *being red*, is separated from all other

* Elements, p. 83.

properties possessed, at the same time, by the several *red* bodies that have come within reach of our perception. The object of this operation is the formation of new aggregates, by means, either of the generalizing, or of the synthetical faculties.

10. Generalization—has place when, after having abstracted one or more properties common to several individuals, we suppose an indefinite number of individuals endowed with the same properties, and give to them a *common name*; that is, a name applicable to any or all such individuals, in respect of the possession of such abstracted properties.

The two latter operations of abstraction and generalization are well explained by Dr. Whately, pp. 68 et seq. pp. 259 et seq. &c.; yet he has omitted them on the present occasion, in speaking of the “operations of the mind concerned in argument.”

11. Synthesis*—the combining several indi-

* The words *synthesis* and *combination*, and their converse *analysis* and *division*, are used for the designation of three distinct operations: 1. Physical or real combination and division, which is either mechanical or chemical. 2. Mental combination and division, that is, the *supposing* or *imagining*

CH. IV. INTELLECTUAL

vidual ideas or impressions, simple or complicated, into one definite individual idea ; for ex. The calling *London* the combination of houses, streets, &c. which constitute that town.

This is probably what Dr. Whately understands by "complex simple apprehension." In his example of a "man on horseback," the *man* and the *horse*, two separate individual (though complicated) ideas, are combined into one individual idea, a "man on horseback," by a synthetical operation.

12. Division (logical)—the converse of generalization. From a general class, constituted by the combination of any number of properties, the forming subclasses, by the additional consideration of other properties applicable only to a part of the individuals to which the general class in question refers. Thus, the class *animal* having been founded on the consideration of the property of *animation*, by the additional consideration of the property of *rationality*, we form the two sub-

two *real* objects to be combined mechanically or chemically. It is to these operations that I have applied the denominations synthesis and analysis. 3. Logical or subalternate combination and division, which are above designated by the words generalization and logical division.

classes of *man*—consisting of those animals which are possessed of that property, and of *brutes*—or those which are deprived of it. These subclasses are called *parts* of the general class, because they refer to a part only of the individuals referred to by that general class ; yet, in both cases, the individuals are indefinite in number, that is, in a number greater than our mind can conceive. For a fuller investigation of this operation, see Ch. VII. Methodization.

13. Analysis—the converse of synthesis. It operates on individual ideas, in the same manner that logical division does on classes. Man, for ex., may be divided *logically* into Negroes and Whites. A man may be *analyzed* (mentally as well as physically) into his *head, neck, body, and limbs*.

14. Simple imagination—the forming, by the *mental* combination of abstracted properties, an *image* analogous to the impression that would have been created by the perception of such properties, were they *really* so combined. Thus, when we are told that “a quadruped is an animal with four legs,” in order to fix this idea in our mind, we immediately refer it to some imaginary individual, to which we consequently

ascribe a number of properties not contained in the idea of "an animal with four legs." These imaginary properties *may* perhaps belong, in fact, to some real individual contained in the class; but the *images* will, much more frequently, be vague or incorrect: as, for ex. when we have heard much mention made of a man whom we have never seen, we figure to ourselves his person and features; and how often are we not surprised, when afterwards we really meet with him, to find his appearance totally different from the image we had formed of him? It is in order to obviate *erroneous* images, that we seek to give correct and exact ones, by description, a mode of exposition which will be treated of in Ch. VI.

15. Observation—the combined operation of the perceptive, retentive, judicative, and attentive faculties, applied to the recurrence of the same phenomena, or relations of things in various analogous instances, and commonly directed to the accomplishment of some particular end.

Observation must not be confounded with *experiment*, which is a physical operation, performed for the purpose, and with a view to observation, and therefore preceding it.

16. Induction. After we have, by observa-

tion, or by evidence, ascertained the recurrence of phenomena, or relations of things in some instances, we pronounce that the same phenomena, or relation of things, have recurred, do, or will recur, in some other instance which we judge to be analogous in the same degree. This operation is called *induction*. It seldom produces absolute belief in all minds, but merely a greater or lesser degree of *contingent* belief, according to the state of the mind, that is, to its confidence, either in the veracity of the observation or evidence, or in the constancy of recurrence of those phenomena in those instances. See Ch. X. Induction.

Expectation appears to be the immediate result of the exercise of the judicative faculty on an inductive operation, of which the conclusion relates to futurity. It can scarcely be classed, however, as an intellectual faculty.

17. Methodization—the arranging* the seve-

* When we speak of *arranging* ideas in the mind, it is not meant, that these ideas are real objects actually placed in different parts of the brain, but that we imagine them (that is, their signs or *words*) to be so arranged either on paper or elsewhere,—to be placed above, below, or by the side of one another,—those which are most similar, with reference to the particular object in view, being supposed to be nearest to-

ral impressions or ideas produced by the exercise of any one or more of our intellectual faculties, in a certain *order*, with a view to facilitate any subsequent operation of any of those same faculties. Distribution and collocation are species of methodization. Some farther details upon these operations, with the accessory ones of generalization, division, synthesis, analysis, and observation, will be found in Ch. VII. Methodization.

18. Invention—the combining ideas in a manner that has not yet been done, and with a view to the attainment of some particular *end*.

19. Communication—the *communicating* an idea to another person is the causing his mind to conceive and to entertain that same idea. Communication includes exposition, the subject of Ch. VI. of this Outline.

This last faculty of communication may appear, at first sight, to be semi-physical, as it

gether in the *arrangement*,—or those which follow one another in the order of thought, being placed after one another in the supposed physical order.

It must be observed, that the word *methodization* is here used in a more limited sense than that which is attributed to it hereafter. But it would be difficult to find a synonymous word which is not liable to the same inconvenience.

requires the aid of the physical faculties of *speaking* or *writing* to bring into exercise. But, in as far as it is mental, it appertains to Logic, and claims a place in this enumeration. Besides that, if any one of the others be closely examined into, it will be found that few, if any, can be made use of without the assistance of those signs which are furnished by language.

In the above list, I have endeavoured to place the faculties in the order of their complexity; the latter ones consisting chiefly of combinations of some of the preceding and more simple ones. It would not be a very easy task to arrange them systematically in distinct classes; there might, however, be some use in referring them generally to the following heads:

1. Simple faculties. Attention, retention, judgment, and abstraction.

2. Tactical faculties. Comparison, observation, generalization, synthesis, division, analysis, and methodization.

3. Ratiocinative faculties. Deduction and induction.

4. Imaginative faculties. Simple imagination and invention.

5. Communicative faculties. Communica-
tion.

These several faculties would require much more explanation and exemplification; but I should thereby be led away from my present object. I shall therefore reserve all further details for my general Treatise, and shall now proceed to follow Dr. Whately in his progress over the field of Logic.

CHAPTER V.

ON TERMS.

(Whately's Elements, Ch. II. Part I. § 2, 3, 4, 5, p. 55.)

SECTIONS 2 and 3 of this part of the Elements are devoted by the author to the exposition of language and its several component parts.

“Language,” he says, “affords the *signs* by which these operations of the mind* are expressed and communicated. An act of apprehension, expressed in language, is called a term; an act of judgment, a proposition; an act of reasoning, an argument, which, when regularly expressed, is a syllogism.”

The enumeration of the intellectual faculties being no longer confined to that of the three which are here mentioned, and the sense of the denominations given to these three faculties having been much modified in my preceding chapter, correspondent alterations are requisite in the above exposition.

* Simple apprehension, judgment, and reasoning. See the preceding chapter.

F



Language, I should say, is the aggregate of the signs by which any mental operation is expressed or communicated. An impression or an idea, when expressed in language, is a *term*; an operation of the judicative faculty, a *proposition*; that of the ratiocinative faculty, an *argument*; that of the deductive faculty, a *syllogism*.

With regard to the remainder of these two sections of the Elements, I have but one observation to make. The author says*, that, in a proposition (for the purpose of deduction) an adjective cannot be made the subject, but may be employed as a predicate. The inconveniences arising from expressing the predicate in an adjective form will be exhibited in the chapter on Deduction; and there it may perhaps be shown, that this is not absolutely "a question of no practical consequence."

The next section (4) relates to *genus*, *difference*, and *properties*, which are thus defined:

"Whatever term can be affirmed of several things, must express either their *whole essence*, which is called the species; or a *part* of their essence, (*viz.* either the *material* part which is

* Elements, p. 59.

called the *genus*, or the *formal* and *distinguishing* part, which is called the *differentia*, or in common discourse characteristic) or something *joined* to the *essence*; whether *necessarily* (i. e. to the *whole* species, or, in other words, *universally*, to every individual of it) which is called a *property*; or *contingently* (i. e. to some individual only of the species) which is an *accident*."

There appears to be some confusion in this paragraph, in which again the meaning of English words is perverted, in order to make them conformable to the Latin. The *differentia* or characteristic is a *species* of property, not *distinct* from it; it is exactly that which belongs *necessarily* to an entity—necessarily, in the ordinary sense of the word, though in the sense here given to it (which is that of *universally*) this may not be the case. If we are *assured* that a property is universal, it becomes essential and characteristic. If we are not *assured* of this universality, we cannot consider the property as essential; though it may happen to be universal; and, as long as we know of nothing to the contrary, we may speak of it as such.

I should therefore say, that whatever term can be affirmed of another is either a synonymous

term, or it is expressive either of the class (or genus) to which the subject belongs, or of a property which appertains to this subject. This property is either *essential* (or characteristic), that is, without which the subject would not be what it is said to be, or *accidental*, that is, such as may or may not belong to all the individuals referred to by the subject.

Suppose *man* to be the subject—the predicate *animal* is its genus, *rational* its *essential* property or *difference*, the properties of *having a white skin* or *ten fingers*, &c. are *accidental*, though in different degrees of contingency. That of *having ten fingers*, for instance, amounts almost to what we should call an *universal* property; yet it is not *essential*; for, if a man had but nine, he would still be a man.

The accidental and essential properties may be easily distinguished by applying to them the following question: An entity, which has not the property in question, is it, or is it not, thereby excluded from the subject in question? If it be so excluded, the property is essential; if not, it is accidental.

Logically speaking, every class is a *genus* when compared to its subclasses, or to the indivi-

duals to which it refers; it is also a *species* when compared with the more general aggregates in which it is contained. Thus, when we say, "What is Cæsar?" Answer, "a man*;" we predicate the genus of *Cæsar*, in the same manner as when we say, "What is man?" Answer, "an animal;" we predicate the genus of *man*.

As to predicating the "whole essence" of a subject, in one term, that is impossible, unless that term be a strict synonym. Dr. Whately does not appear to have been aware of this; he implies, that, if we predicate the genus, we predicate a part of the essence; if the species, we predicate the whole essence; considering *species* in the sense in which naturalists employ the word; in which case it is, in fact, a logical genus with reference to individuals. "If I predicate," says he†, "of Cæsar that he is an animal, I say the truth indeed but not the whole truth, for he is not only an animal, but a man." But this is not yet the whole truth; for he is not only a man, but a white man; not only a white man, but a Roman; and so on, till we come to the individual Cæsar. Logical species and genus are only relative, not absolute terms, and the use of them always im-

* Elements, p. 64. † Ibid. p. 63.

plies *subalternation*; that is, relation, either to a superordinate genus, or to a subordinate species or individual.

“§ 5. Subalternate genus and species.” Elements, p. 63. Of summa genera (or genera generalissima), properly so called, there is but one, viz. *Entity*; yet, as it may have been seen in the classification of entities, there is a convenience in considering as summa genera several ethical and other terms. But it is a great mistake in logicians to suppose that there is such a thing as an *infima species*, that is, one which contains under it nothing but individuals. The number of individuals contained in a logical aggregate is always indefinite; when a class, therefore, is divided and subdivided, each part refers also to an indefinite number of individuals,—the very property of infinity is, that it cannot be so divided as to be reduced to “nothing but individuals;” for then these individuals would be no longer indefinite in number. “Magnet,” says Dr. Whately, “is an *infima species*, (i. e. only a species).” What is meant by the explanation “*only a species*,” is more than I can make out; assuredly this is not the translation of *infima species*: but let us take these Latin

words in their real sense, viz. "a species of the *lowest* degree;" it may be allowed, that no two individual magnets are exactly alike in every respect. Suppose one to be *square*, another *round*; there may well be imagined an indefinite number both of square and of round magnets. Here are then two subspecies of an infima species, two species *below* the *lowest*; and so it may happen in any case.

With respect, however, to each particular subject-matter of classification, there may be a convenience in considering the whole aggregate of that subject-matter as a summum genus, and any class of the last degree to which it is advisable to carry the subalternate division, as an infima species. But this can only be said *relatively* to that particular *system*: not *generally*, as it is here asserted. As to the particular sense in which naturalists make use of the word species, it is very different from the logical sense of the word, the only one in which it should be made use of on the present occasion.

The great labour spent on the distinction between *differentia* and *property*, p. 65, might have been spared, if it had been considered that the

one is but a species of the other. The author himself has, on a subsequent occasion*, made use of the word property in that general sense, which must include essential as well as accidental properties.

Accidents (that is, *accidental properties*) are next divided into separable and inseparable, a division which may not, perhaps, be found to be in strict conformity to the standard rule, “*Membra condidentia sint contradistincta et opposita†* ;” for in the two examples here given (a man *walking* and a man *native* of Paris) I cannot discover any difference in the respective *separability* of the properties in question. What does the property of a *man walking* mean?—That the man of whom it is affirmed, was walking, at such a time, in such a place.—And that of a man’s being a *native* of a place?—That he was born at such a time in such a place.—The man is no longer walking in that place.—True, but he is no longer being born either.—You cannot, how-

* “If one of two properties, &c.” *Elements*, p. 242.

† Saunderson’s *Logic*, p. 27. “The parts or members must be opposed.” *Whately’s Elements*, p. 69.

ever, take away from him his property of having been born.—No : nor can you take away that of his having been walking. Where then is the distinction between the *separable* property of having been walking, and the *inseparable* property of having been born ?

CHAPTER VI.

EXPOSITION.

(Whately's Elements, Ch. II. Part I. § 7, Definition, p. 71.)

WE now come to the important operations of Exposition and Methodization, to each of which I shall devote a chapter. Dr. Whately commences with division, and then treats of definition. I have reversed this order, considering exposition to be the more simple operation of the two, and therefore as presenting itself naturally before the other.

In the general Treatise which I am preparing, I have devoted a long chapter to the explanation and exemplification of the various modes in which exposition may be performed. On the present occasion, however, I can only give a short analysis of the subject ; my purpose being merely to enable the reader to compare generally my view of the matter with the few words which will be found in Dr. Whately's Elements, and other Logical works.

Exposition is a name, which may be applied to the designation of every operation, destined to enable the learner* to attach, to the word or sentence expounded, an idea precisely the same as that which is attached to it by the teacher.

Any portion of discourse may be unintelligible to him to whom it is directed, either by conveying to his mind no idea at all, or by conveying to it, a *confused, incomplete, or erroneous*† idea. The object of exposition is therefore either to attach an idea to a word, or to give clearness, completeness, or correctness†, to an idea already attached to it. Exposition is that which Logicians call *definition*, taken in the most extensive sense of the word. *Expounding* a word may be also termed *explaining* the idea attached to that word.

In the following enumeration of the different modes or species of exposition, the order attempted to be adopted, is that in which they

* The word *learner* is here made use of to designate him to whom discourse is addressed, and *teacher*, him who makes use of such discourse.

† By a *correct* idea is meant, upon this occasion, the idea which was intended to be conveyed; by an *erroneous* idea, one which was not intended to be conveyed.

would present themselves for use ; commencing with that which must be resorted to in the case where the learner is entirely ignorant of any word comprised, either in the language to be taught, or in any other language known to the teacher.

1. Physical designation. In the above-mentioned case, this is the only mode of exposition that can, at first, be used. It consists in the designating objects by *signs*, (as by pointing to real objects, by performing perceptible operations, &c.) and at the same time pronouncing the *name* to be given to those objects ; this name being the word to be expounded. Thus may be formed, though with much labour and little accuracy, the rude outline of a language, consisting, in the first place, of proper names only. In process of time a few common names, adjectives, verbs, and other expletives may be added ; so as to allow the use of any of the following modes, which may be termed *logical* or *discoursual* modes of exposition, in contradistinction to this *physical* or *non-discoursual* mode.

2. Translation—the expounding a locution by the exhibition of a *synonymous* locution already known to the reader ; that is, one which already

conveys to his mind the idea intended to be attached to the locution expounded.

This mode is applicable either to the case where the object is to instruct the learner in a language unknown to him, or where it is to teach him, in the same language, synonymous terms; either because they have been made use of by authors whom he may have occasion to refer to, or because the new term may be more convenient for some particular use. The expressions "*Hombre* is the Spanish for *man*," "The *peduncle* is the botanical name for a *flower stalk*," are examples of exposition by translation.

3. Etymologization—the exposition of a word by the exhibition of the grammatical relation it bears to another word called its *root*, and from whence it is said to be *derived*. Grammatical relations have place whenever it has been found convenient to express, by regular modifications in the form of a word, any regular relations in the sense of two words; such as of *time*, *sex*, *number*, &c. the relation between the operator and the operation; between a property and its subject-matter, &c. as, for ex.: governor, governess; actor, actress; write, wrote, &c. The exposition of a word by the exhibition of its

root, may be, on some occasions, attended with considerable clearness and conciseness; but this mode is, in general, liable to *fallacy*; that is, to erroneous and deceptive exposition, as will be shown in Ch. XI, on Fallacies, under the head of Fallacies of Paronymity and of Etymology: the *root* and the *word derived* being collectively designated by the name of *paronymous* words.

The two preceding modes are comprehended by logicians under the denomination of *nominal* definitions, which they distinguish from *real* by saying that the former explain the *meaning of the term*, the latter the *nature of the thing*. Dr. Whately observes, that, in *most* cases, “the meaning of the word and the nature of the thing are exactly the same.” He might have said in *all* cases. Yet there does exist a difference between the two modes in question, and those which will follow; a difference which Dr. Whately had probably in view, but has not succeeded in explaining to his readers. It consists in this, that, in what may still perhaps be termed *nominal* exposition, the meaning of the word (or nature of the thing) is represented at once, by means of a single term already known to the learner. In the *real** ex-

* It must be remembered that the word *real* is here op-

position, the operation is performed by the combination of a number of terms, expressive of ideas different from that which is explained. Thus, it may be said, that, in nominal exposition, words only are considered; in real exposition, the ideas also connected with the words.

4. Definition—the exhibition of the genus to which a collective idea belongs, and of the properties which distinguish it from all other species of the same genus. This is that mode which Aristotelians term “*Definitio per genus et differentiam*,” and which Dr. Whately has denominated “*Essential Definition*.” It is applicable only to common names, and, when practicable, is the most exact of all modes of exposition. Ex. *Homo est animal rationale*. The *characteristic phrases* of naturalists are all definitions.

5. Individuation—the corresponding operation performed on the name of an individual, viz. the exhibition of its genus and characteristic properties. This mode differs from definition; because, in this case, the only characteristic properties are those of *time* and *place*, which must both be exhibited. No other properties, nor yet

posed to *verbal*; a sense different from that in which I have used it on other occasions where it is opposed to *fictional*.

one of these without the other, can ever distinguish an individual from all others which may exist, or can be conceived to exist. As time and place are constantly varying, exposition by individuation alone, can never enable the learner to *recognize* the individual whose name is thus expounded. Definition, on the contrary, affords him the means of pronouncing, on all occasions, whether an individual belongs or not to the genus of which the name is defined.

Examples of individuation: John is the man who is sitting in that chair. Louis XVIII is the man who was King of France at the time you were at Paris.

6. Paraphrasis. The exposition, by paraphrasis, of a fictitious entity, is the combining the word in question with others, so as to make up a complete proposition, and then translating that proposition into an equivalent one, composed of names of either real or physical fictitious entities*. These two successive operations may be denominated *phraseoplerosis* and *equivalence*. The following examples are expositions by paraphrasis of the words *obligation* and *right*. "A man

* See the classification of entities, at the end of Ch. III.

being under an *obligation* to do a thing, means that he is liable to punishment if he does not do it." "A man having a *right* to do a thing, means that any other person, who prevents him from doing it, is liable to punishment for so preventing him."

This mode is applicable only to names of fictitious entities; and, amongst those, it is for the exposition of such as may be considered as *summa genera*, that it is particularly appropriate, and indeed the only practicable mode.

7. Archetypation. This is the exposition of the name of a fictitious entity by the exhibition of the name of the physical entity (or *archetype*) upon which the imagination of the fictitious entity in question has been grounded. Take for example the two following expositions of the term *end-in-view*:

"The *end-in-view* bears the same relation to a mental operation, that a physical *end*, or place which it is wished a body in motion should arrive at, bears to the motion of that body."

"The idea of *end-in-view*, applied to a mental operation, is derived from that of the *end* which is the object of a body in motion; as, for instance, the *winning-post* in a race-course."

8. Description is a detailed exposition of *accidental* properties; that is, of those of which the exhibition is not necessary for the distinguishing the object in question from all others which are not designated by the same name. Description may accordingly become more and more ample to an indefinite degree. Suppose, for example, a quadruped to be *defined*, "Animal mammifer pedibus quatuor;" in the *description*, we may add the properties of *living out of water, having no wings*. These properties belong to the generality of quadrupeds; they *may* belong to all; yet, if a mammiferous animal with four legs be hereafter discovered or imagined, either living *in* water, or possessing wings, this animal would still be a quadruped.

Such is *specific* description, or description applied to logical aggregates or collective entities. The object of description is, in this case, either to enable the learner to *recognize* a species, with greater readiness, or to furnish his mind with an image such as may fix the collective entity in his mind. By *recognizing* a species, must be understood, the being enabled to say whether any individual that may come within reach of our perception, does, or does not, belong to such species.

Definition is the only mode that can enable us to determine this with positive certainty; but the characteristic properties (which alone are exhibited by definition) are frequently difficult to perceive. Description, in these cases, furnishes us with more striking properties, though less universal; recognition becomes more ready, but less accurate. Description should therefore be always accompanied, or rather preceded, by definition. The importance of this rule has been felt in the case of naturalists' descriptions, for instance, where the characteristic phrase (which is a definition *per genus et differentiam*) always precedes the detailed description.

It has been said, in speaking of the imaginative faculty, that our mind, in order to retain any physical idea presented to it, must form to itself an image consisting of more properties than those given by the definition. One object of specific description is to furnish the imagination with such properties as are *actually* possessed by some, at least, of the individuals referred to, and perhaps by all; which is better than if the image were formed of such as were *never* possessed by any of them.

Individual description, or description applied

to individuals, is of still more importance; for, though liable to the same uncertainties and inaccuracies as specific description, it is the *only* one that can serve for physical recognition; as the properties exhibited by individuation, viz. those of time and place, are continually changing. Portraits, personal descriptions in passports, particulars of sale of estates, &c. are examples of individual description.

9. Parallelism, including antithesis.—This may be considered as a species, or at any rate, as a slight modification of description. It is applicable to the case where an entity is essentially distinguished from another by minute or difficult characters, (that is, characters which it is difficult to perceive or to comprehend). By parallelism, in this case, the two objects are compared with respect to other properties than those given in the definition. Relations of similitude and dissimilitude between the two objects in question, are thus pointed out. In as much as similitude is exhibited, the operation receives more especially the name of parallelism; when it is dissimilitude, and more particularly opposition that is exhibited, the operation is termed antithesis.

10. Enumeration,—considered as a mode of

exposition,—is the successive exhibition of all the minor aggregates comprehended in a superordinate genus, or of all the several individuals comprehended in a synthetical entity, that is to say, of the several parts of an individual ; the *superordinate genus* and the *synthetical entity* being in these cases the entity to be explained. Hence the division of enumeration, into *specific* and *individual* enumeration, according to whether it be applied to a genus or to a synthetical entity.

Enumeration can only serve for exposition, in as much as it is complete; when incomplete, it is mere exemplification. Hence it is that specific enumeration is seldom accurate. For if you expound the name of the genus, *Equus*, by saying that it consists of the four species, *Horse*, *Ass*, *Zebra*, and *Couagga*, you do not give an accurate idea of it; for there may be other species, hitherto unknown, belonging to the same genus. Enumeration in this case can only be complete when the species are formed by the contradictorily bifurcate system hereafter explained*.

Individual enumeration is exemplified in the case of catalogues, &c.

* See Ch. VIII. Methodization.

11. Exemplification—is the exhibition of one or more individuals comprised in a collective entity, or of one or more species of a superordinate genus, for the purpose of giving a clearer conception of the properties ascribed to that collective entity, or superordinate genus, by any other mode of exposition. Exemplification is applicable only to the exposition of collective entities, not to that of individuals. *Cæsar's hand* cannot serve as an example of *Cæsar*; but *Cæsar* is an example of a *Roman*.

12. Illustration.—This operation may assist the exposition of names of fictitious entities, and particularly those of mental operations. It is performed by describing some analogous real entity or physical operation. Its object is to facilitate conception in the learner's mind, in respect of readiness and clearness; but it is liable to defect in respect of accuracy. It may be said to have the same relation to paraphrasis and archetypation, which description has to definition.

With respect to the classification of the foregoing twelve modes of exposition, there might perhaps be some advantage in reducing it to the form of the following synoptical table:—

TABLE OF MODES OF EXPOSITION.

Exposition is.....	{ either Nominal	{ either by exhibition of synonymous words..... or by exhibition of paronymous words.....	{ either specific..... or individual.....	1. Physical Description.
				2. Translation.
{ or Logical	{ either Essential	{ either with exhibition of a superordinate genus..... or without exhibition of a superordinate genus.....	{ either with previous Phraseoclerosis.. or without Phraseoclerosis..... either by exhibi- tion of pro- perties be- longing to exponendum or by comparison with analogous entities..... or by exhibition of properties belong- ing to some other entity.....	3. Etymologization.
				4. Definition.
{ or Real	{ or Subsidiary	{ either by exhibition of properties..... or by exhibition of parts; that is, of subspecies, or of indi- viduals.....	{ either complete..... or incomplete.....	5. Individuation.
				6. Paraphrasis.
{ or Real	{ or Subsidiary	{ either by exhibition of properties..... or by exhibition of parts; that is, of subspecies, or of indi- viduals.....	{ either complete..... or incomplete.....	7. Archetypation.
				8. Description, specific or in- dividual.
{ or Real	{ or Subsidiary	{ either by exhibition of properties..... or by exhibition of parts; that is, of subspecies, or of indi- viduals.....	{ either complete..... or incomplete.....	9. Parallelism and Antithesis.
				10. Illustration.
{ or Real	{ or Subsidiary	{ either by exhibition of properties..... or by exhibition of parts; that is, of subspecies, or of indi- viduals.....	{ either complete..... or incomplete.....	11. Enumeration, specific or in- dividual.
				12. Exemplification.

If exposition be considered with respect to its immediate object, it may be divided into *Onomatopœa*, or the giving a new name to an idea, and into *Exposition of existing words*.

In following the same principle of division, exposition of existing words may be subdivided into the following operations:—

1. Substitution of a new sense to the one in which a word has already been used, an operation resembling onomatopœa, but attended with much more practical inconvenience, excepting where the use of the word in its old sense be at once disadvantageous, and of rare occurrence.

2. Elucidation—where the object is to give clearness to an *obscure* term.

3. Disambiguation—where it is to fix the sense of an *ambiguous* term. This operation has been termed *distinction* by some Logicians, and erroneously reckoned as a species of division.

4. Ampliation—where it is to *extend* the sense of a term.

5. Restriction—where it is to *restrict* the sense of a term.

The above division of the operation of exposition may not at first appear to be attended with much practical use. Yet there might probably

be found some advantage, if every writer who gives a *new* exposition of a term were to consult this list, and observe to which of the above species his exposition may be referred. He might thereby be the better enabled to judge whether it answers the special purpose for which it was framed.

Let us now proceed to examine the view taken of this field by Dr. Whately.

“Definition” (says he) “is another metaphorical word, which literally signifies, ‘laying down a boundary;’ and is used in logic to signify ‘an expression which explains any term, so as to *separate* it from every thing else,’ as a boundary separates fields.” P. 71.

The first part of this exposition is performed in that mode which is above denominated *archetypation*, and will probably be found correct, though, in this case, it can scarcely suffice. Let us submit the second part to a logical scrutiny, according to the rules given in p. 74 of the Elements.

According to the first rule, “the definition must be adequate, i. e. neither too extensive nor too narrow for the thing defined;” meaning, of course, that whatever is designated by the name

of the thing defined, must answer to the definition, and that whatsoever is not so designated, must not answer to it.

A definition is "either essential or accidental." "An accidental definition assigns circumstances belonging to the essence, but which are not constituent parts of the essence;" "e. g. Philip was a man of Macedon who subdued Greece, &c." Is this definition conformable to the above rule, and does it agree with the above exposition of the word *definition*? Does it distinguish Philip from *every* thing else? Might there not, for aught we know, have been *another* "man of Macedon who subdued Greece?" It is true there is an &c.; but you may continue to substitute properties for the &c. to all eternity, without arriving at any *certainty* of distinguishing Philip from every other man, unless indeed you mention *time* and *place*; but then the definition becomes *essential*, not *accidental*. The fact is, that the explanation here given of the word definition is such as to make it refer only to the essential, not to the subsidiary modes of exposition*.

* Thus, Dr. Whaley has observed that description of species cannot belong to this head, because the properties may not be universal; that is, that if an individual be deprived of

The rule also quoted above is applicable only to the essential modes.

Again, he says that definition is an expression that explains "any *term* so as to separate *it* from every *thing* else." So, if we were to define *Logic* a "term consisting of the letters L, o, g, i, c," it would be separated from every thing else: but is that a definition according to the author's ideas? In order to include all the matter which he probably intended, and no more than that, he might have said, "any term so as to separate the *idea represented by it* from any other idea."

The second rule is, that "the definition must be in itself plainer than the thing defined." He explains the expression "in itself" by the word "generally;" that is to say, that the definition must be plainer to the generality of the persons to whom it is addressed than the term (not the *thing*) defined. In the above-mentioned exposition of the word definition, "it is an expression that *explains*," this rule may not be found to be

any such property, such individual may still belong to the species; but so it is in the case of individual description (time and place excepted). Thus, if it be discovered that there is reason to believe that Philip was not born in Macedon, he would still be the man who, *at such a time, subdued Greece.*

so strictly conformed to as might have been done; for *explain*, in this sense*, is a mere synonymous word to *define*. The exposition would perhaps be clearer and more correct if thus expressed: "Definition is an operation performed in respect of any term, so as to, &c." This would be a definition per genus et differentiam; "operation" being the *genus*, and "performed in respect of any term, so as to, &c." the *species*.

There are several divisions given here of the genus *definition*; that is, several classifications of species, or modes of definition.

The first division is that of definition into nominal and real, which has already been examined, p. 78.

Secondly; *each* of these is divided into *accidental* and *essential*. With regard to real definition, these submodes correspond nearly to description (or rather to individual description only) and to definition according to the list above given. But how is *nominal* definition divided into accidental and essential? If it makes *no* mention at *all* of any ideas, and consequently of properties,

* I have used it in a different sense; considering explanation of the *idea* as an operation corresponding to exposition of the *word*.

how can it be divided according to the properties it lays down? No examples are given of these submodes of nominal definition; and it might not be a very easy task to find any.

“Lastly, Essential Definition is divided into *physical* (i. e. natural) and *logical* or *metaphysical*: the *physical* definition lays down the *real parts of the essence* which are actually separable. Thus a plant would be divided *physically*, by enumerating the leaves, stalks, roots, &c. of which it is composed*.” By a *plant* is meant, I suppose, the collective entity *plant*, or some *species* of plant, not an *individual* plant. Now a species, as is ably shown in many parts of the Elements, has no real existence, and has therefore no *real* parts. Real leaves, stalks, roots, &c. may appear at first to be parts of the collective entity “a plant;” but this is owing to the inaccuracy of language. The real idea is this; that *to the genus plant belong all those entities which are endowed with the property of possessing leaves, stalks, roots, &c.* If these properties are not essential to the constitution or to the essence of the genus plant, (as in the case of leaves, for instance,) their enumeration belongs to descrip-

* Elements, p. 72.

tion, not to essential definition ; which would thus be reduced to the second part, viz. logical definition. In the example of the *Proposition* of which the parts *subject*, *predicate*, and *copula*, are enumerated, this enumeration is again one of *properties* which, in this case, are all essential ; but I do not see any thing more *physical* in the property of being expressed by means of two terms and a copula, than in the property of expressing an affirmation or a negation.

These distinctions between Dr. Whately's several modes of definition may be thus exhibited in a tabular form :

TABLE OF SPECIES OF DEFINITION

According to Dr. Whately's Elements.

Definition of a term has place	By giving a synonymous word <i>without any regard to any idea.</i> (Nominal Definition.)	By the exhibition of properties essential to the constitution of the <i>idea</i> expressed by the definendum. OR By the exhibition of properties belonging to the essence; i. e. not essential to the constitution of such <i>idea</i>.	Essential Nominal Definition.
			Accidental Nominal Definition.
	OR By exhibiting the nature of the <i>idea</i> expressed. (Real Definition.)	By the exhibition of properties <i>essential</i> to the constitution of the <i>idea</i> expressed by the definendum. Essential Real Definition. OR By the enumeration of properties, <i>essential or not</i>, which may be expressed by the words "<i>It</i> (the definendum) <i>consists of</i>—(such properties.)" OR By the enumeration of essential properties only, in whatever manner they be expressed.	Physical Definition.
			Logical Definition.
		By the exhibition of properties not essential to the constitution of such <i>idea</i> , but which <i>do</i> belong to it.	Accidental Real Definition.

By comparing this table with that of Modes of Exposition given above, the reader will be enabled to judge to which author the following paragraph may be applied.

“It is scarcely credible how much confusion has arisen from the ignorance of these distinctions which has prevailed among logical writers.”
Elements, p. 74.

CHAPTER VII.

METHODIZATION.

(Whately's Elements, Ch. XI. Part I. § 6, Division, p. 68.)

THE exposition of the general principles of Methodization, and of its application, in the instance of some of the most important subjects, form a considerable portion of Mr. Bentham's MSS. on Logic. The following short exposé of the theory is chiefly abstracted from those papers.

As the object of *exposition* is the conveying a clear, correct, and complete conception of the idea represented by a word, so that of *methodization* is to enable the mind to entertain a clear, correct, and complete notion of a number of ideas, either *simultaneously* or *in succession*, in such manner as to be able with facility to retain, to compare, or to combine them with a view to the accomplishment of any particular end.

Methodization may therefore be defined, the

putting a number of objects together in a particular manner, directed by design to a particular end.

Methodization is either *physical* or *logical*; *physical*, when the objects methodized are real entities; *logical*, when they are ideas. But, as ideas themselves have no real existence, and therefore cannot actually be placed in any order, it is upon the *signs* only which represent those ideas that logical methodization can operate.

These signs being *words* or *names* of the ideas, nomenclature (that is, the giving names) is, as well as exposition, an operation essentially subservient to methodization; and is accordingly treated of in detail in the MSS. before me. Much has, however, been already published on this subject, both in Mr. Bentham's *Chrestomathia* and in my above-mentioned "*Essai sur la Nomenclature et la Classification, &c.*" I do not think it therefore necessary to repeat, on the present occasion, what has there been said.

Methodization may be divided into two distinct operations, according to whether it has place with or without regard to *succession*; that is, to *priority* and *posteriority*. These two modes of methodization may be termed *successive colloca-*

tion, or simply *collocation*, and *distributive* or perhaps *tabular methodization*. The former directed more particularly to the purpose of facilitating conception; the latter to that of assisting the operations of retention, comparison, and combination.

Conception is produced by communication; and this operation by means of discourse. It is therefore upon the elements of discourse that collocation operates.

Ideas are communicated in the succession of time; but, as audible signs alone can be given in the order of time, visible signs, their permanent representatives, must be arranged in the order of *place*, which, according to certain conventional rules, is considered as emblematical of the order of time. Thus, priority, with us, is usually ascribed to the top and to the left-hand of the sheet; but some nations consider the right-hand side as the first: upon some occasions, priority is also ascribed to the bottom of the sheet, &c.

The elements of discourse are *words*, the signs (either singly or taken together) of simple ideas. These words constitute *sentences*, the signs of propositions. Every discourse is formed of the combination of sentences which, when the dis-

course is of sufficient length, are combined into more general aggregates termed *paragraphs*, *sections*, *chapters*, &c.

Collocation consists therefore in the arrangement—1st. of words in sentences; 2d. of sentences in paragraphs, sections, &c.; 3d. of paragraphs, sections, &c. in a discourse. The particular rules of collocation belong to the theory of language; a subject intimately connected with Logic, and which will form the second part of my Treatise; but which might appear irrelevant, were it further detailed on the present occasion.

Distributive methodization has place where ideas are realized, either in the shape of a *whole*, consisting of a number of *parts*, or of a *receptacle*, containing a number of other ideas. It is *individual* or *generic*, according to whether those ideas are representative of individual or of collective entities. In the latter case, it has received more particularly the name of *classification*.

Thus, for example, when we divide a regiment into battalions, the regiment is considered in the character of an individual whole, consisting of so many individual parts. But, if we divide *regiments*, into regiments of *infantry*, of *cavalry*,

of *engineers*, of *artillery*, &c. the word *regiments* represents a collective entity or *genus*, consisting of so many *species*, or collective entities of an inferior order.

Distributive methodization may be performed by three distinct operations:

1. By *dividing* a given entity into *parts*. This operation has been denominated *analysis*, when performed upon individual entities; *logical division*, in the case of collective entities.

2. By *uniting* a number of given entities into a *whole*: an operation termed *synthesis** in the case of individuals; *generalization*, when performed upon collective entities.

3. By *distribution*. For the performance of this operation, a number of *wholes*, as well as of *parts*, are supposed to be already given; but, as, in the case of real entities, the exhibiting of wholes and parts might appear to constitute the whole of the operation, the figure is now changed, the aggregate ideas are realized as *receptacles*,

* Also, by some logicians, *physical division*. It includes both the *resolutio* and the *partitio* of Saunderson's Logic; for I do not perceive any distinction between his "*partes constitutivæ*" and "*partes integrantes*." See Saunderson's Logic, p. 47.

into which the several given partial ideas are supposed to be *placed* or *distributed*.

Of these several operations, those which relate to individual methodization can scarcely be considered as appertaining to the province of Logic ; the tactical branch of which science relates rather to classification, and more particularly to *division*, as being the most important, in the present state of human knowledge. The theory of generalization belongs chiefly to the logical history of the formation of ideas and of languages, which will be attempted, in as far as it is suggested by conjecture, in a chapter of the Theory of Language, forming the second part of my above-mentioned Treatise on Logic. Distribution is so closely allied to division, that it may not be worth while to consider it separately. A single example may suffice on the present occasion, to shew the mode of operation of generalization and distribution.

A botanist visits a country with whose productions he is as yet unacquainted ; he sees a number of plants which resemble one another very strongly, and which differ considerably from any other plants which he has seen or heard of ; he discovers successively several of these *sets* of

plants, and by *generalization* he forms as many new *species*, characterized by the properties he has *observed* in these several individual plants.

On referring to his books, he compares the several properties there given as characteristics of general classes, with those which are possessed by his several new species, and thus decides to which of these general classes the species in question belong. This may be termed *distributing* those species under their superordinate genera.

Suppose that by the addition of these new species, some one class (or logical genus) may now consist of so many, as to render it difficult to compare them or to retain their distinctive properties without the help of some intermediate classes; these classes may be formed either by *dividing* the genus into subclasses, or by *distributing* the species into groups. In this case division and distribution appear to be so closely allied, as scarcely to be distinguishable otherwise than by the form of expression.

The operation of logical division has been thus characterized in a preceding page: "From a general class, constituted by the combination of any number of properties, the forming subclasses, by the additional consideration of other

properties, applicable to a part only, of the individuals to which the general class in question refers." This general class is termed *superordinate* with relation to the subclasses into which it is divided ; the subclasses are *subordinate* to the general class, and *coordinate* with regard to one another.

Dr. Whately, following the example of Aristotelian Logicians, lays down three or four general rules for division ; but these rules are not equally applicable on all occasions, nor to all modes of division. The theory of the operation may be said to consist of five considerations: 1. The particular end in view, or object of the division. 2. The nature of its subject. 3. The source or principle. 4. The mode of division. 5. The extent to which it should be carried.

I. The first consideration is that of the end-in-view, or purposes which it is intended that the division should accomplish. These purposes are either *practical* or *logical*. The practical purposes depend upon the particular branch of art and science which it is intended to assist, as for ex. Agriculture, Natural History, the Commissariat-art, &c. (See Elements, p. 68.) The logical purposes relate to the manner in which it

is intended that this assistance should be given ; that is, upon the mental operation, for the performance of which, *method* is to serve as an instrument ; as for ex. for exposition, retention, invention, &c.

II. The Logician should next consider the nature of the subject of his division, that is, of the summum genus or general aggregate, which contains the whole subject, with the characters which separate it from all other aggregates which may happen to be connected with it, or contiguous to it, with reference to the particular end-in-view. Thus, if a " Farmer's stock" be the subject of classification, it is necessary to know what constitutes *stock*, how it is distinguished from *farm-buildings*, &c. &c.

III. He must choose the most advantageous *source** of division, that is, the nature of the properties which are best suited for the characterizing the *parts* or results of division. This selection of properties depends of course upon the end-in-view, and particularly upon the prac-

* I have preferred the word *source* to that of *principle*, made use of by Dr. Whately : the latter word appearing to me to be too general, and applicable perhaps to the aggregate of the above five considerations.

tical purpose of the classification. Thus the agriculturist may divide Live Stock according to the *usefulness for cultivation* of the different animals, as compared with the *expense of keep, prime cost, &c.* The naturalist divides animals according to their *conformation*; the commissary may derive his divisions of animals from their usefulness as *furnishing food, or as beasts of draught, &c.*

When two separate divisional operations are performed upon the same genus, and are derived from different sources, they may be termed *coordinate* divisions.

IV. The mode of division to be adopted on each occasion will be found to depend upon the logical purpose of the operation. If the object be to give an *exact* and complete exposition of the parts into which the subject is divided, the only mode which can answer the purpose is that which may be termed *contradictory bifurcate* division. Where either *retention* of the names of the species and of their reference to the genus, or *exemplification* of the genus, is the chief purpose in view, the loose or irregular multifurcate division may be found adequate or even more appropriate.

The contradictory bifurcate mode consists in the dividing the genus into two species, according to some *property* possessed by *all* the individuals referred to by one species, and by *none* of those referred to by the other. Irregular multifurcate division consists in the dividing a genus into any number of species, whereby this opposition is rendered impossible. The former mode can only ensure what Logicians call a *perfect* division; the latter being liable to *incompleteness, incorrectness, or indistinctness* of parts.

The rules for division usually given by Logicians apply to their *perfect* division. Dr. Whately gives but three, Saunderson and others have four, which it may not be amiss to examine on the present occasion.

1. "Membra absorbeant totum divisum." *Let the parts exhaust the whole subject.* Saunderson, p. 47. "All the parts together must be exactly equal to the thing divided; therefore we must be careful to ascertain that the *summum genus* may be predicated of *every* term placed under it, and of nothing else." Whately's Elements, p. 69.

If the division be conformable to this rule,

it may be termed *complete*, and the aggregate of the species may be said to be *all-comprehensive*. Such a division has also been termed *exhaustive*; but this can only be said of it with reference to the particular source of division adopted, and not generally, as every genus may be divided according to an infinite number of sources of division.

2. “*Divisum esto latius singulis suis membris; adæquatum universis.*” Let the subject be more extensive than each of its parts; equal to them all. Saunderson, p. 47. Here we have two rules; the first is thus given by Dr. Whately: “Each of the parts, or any short of them *all*, must *contain less*, (*i. e.* have a narrower signification) than the thing divided.” In other words, the rule amounts to this: “Let the whole be greater than each, or any short of all of its parts.” If any means be found of dividing any thing so that the whole shall not be greater than its parts, then the utility of this rule may be discussed: till then, few persons will derive much advantage from learning a rule which they *cannot* transgress*. The second part of the above

* Du Trieu (*Manuductio ad Logicam*, ed. Lond. 1826, p. 107), after giving the rule, “*Divisum debet plus continere*

rule of Saunderson is but a repetition of the first *rule of completeness*.

3. "Membra condidentia sint contradistincta et opposita ; ita ut confundi nequeant, vel coincidere." Let the condident members be contradistinct and opposed ; so that they may neither be confounded nor coincide. This may be termed the rule of contradistinction and opposition, or, generally, the *rule of distinctness*; contradistinction applying to distinctness in expression, opposition to distinction in the partial ideas themselves. This rule is thus given by Dr. Whately: "The parts or members must be *opposed*; *i. e.* must not be contained in one another ;" which does not appear to me so clearly expressed as it is by Saunderson.

quam singula membra dividenda," thus exemplifies the corresponding defects. "Hinc vitiosa est ista divisio, *animalium aliud sensitivum, aliud homo, aliud brutum*: nam *sensitivum*, quod est unum e membris dividendis, est convertibile cum *diviso*." But who is there who would think of dividing "animals" into "men," "brutes," and "*sensitive beings*?"

Aristotelian logicians usually include the distinction of the two senses of an ambiguous word amongst the modes of division. I should rather reckon it as a species of exposition. See above, p. 88.

After these three rules (the only ones given by Whately), Saunderson adds a fourth, which may rather be considered as an attempt to indicate the mode of division best adapted for securing completeness and distinctness, than as a general rule of division.

4. “*Divisio fiat in membra proxima et immediata, et (quam fieri commodè potest) paucissima. A proximis porro ad remotiora et minutiora descendendum per subdivisiones. Dichotomiæ sunt laudatissimæ, ubi commodè haberi possunt, non tamen nimium superstitiosè et anxie ubique venandæ ; quod faciunt Ramæi*.*”

Having given completeness and distinctness as essential qualities of the “*divisio perfecta*,” and having perceived that opposition is necessary to distinctness, and that opposition supposes *two* objects only, as our minds can only compare two objects together at the same time,—Saunderson was naturally led to conclude, that, in each divisional operation, the result should be *two* parts only. But, upon reflection, he was probably led

* Dr. Whately makes no mention of this rule: Du Trieu and others say, “*Membra dividenda sint pauca.*” Dr. Watts has greatly enriched the vagueness of these expressions in his rule, “Let not your subdivisions be too numerous without necessity.”

to consider, that, if the successive bifurcate divisions of logical aggregates were carried on to the lowest stage necessary for classification, and if, at the same time, names were given to every one of the intermediate aggregates so formed,—this operation would, on many occasions, be attended with more labour than advantage, and would require too great a strain on the memory. He therefore added the restriction, that dichotomy was only to be made use of when it could be easily performed; and that it should not be sought out on all occasions with that superstitious strictness with which the Ramæans followed it.

On this occasion, he has not considered that there are generally two distinct logical operations which classification is intended to assist: the one is exposition, which requires the *perfecta divisio* performed by contradictory bifurcation; the other is retention, which may be better assisted, in many instances, by multifurcate divisions. The latter may happen to be as complete and distinct as the other; but it cannot be *made* so, nor can any assurance be had of its being actually so, unless it be proved by the application of a contradictory bifurcate division to the same subject-matter.

The above principle may be rendered more

intelligible by means of an example. Take, for instance, as a summum genus, or subject-matter of division, the class of animals called *Vertebrata*. If the object be merely to give a general idea of the kind of animals that are comprehended in that class, and if it be not necessary, with reference to that particular object, to define exactly the nature of the several subclasses or species which it contains, you may divide *Vertebrata* generally into *Mammifera*, *Birds*, *Fishes*, *Lizards*, and *Serpents*; and you may thus describe these several species of animals: “*Mammifera* are those who suckle their young; *Birds* are animals which have wings and feathers; *Fish* have fins and live in water; *Lizards* are little animals with four legs and scaly skins; *Serpents* have no limbs at all, but crawl upon their bellies.”

This classification may answer the purpose of those who only wish to obtain a slight and general idea of vertebrated animals; but it cannot suffice for the naturalist, who must always be assured of the all-comprehensiveness of his classes and subclasses; he must always be enabled to ascertain precisely to *which* of them he should refer any individual animal that comes under his observation. For this purpose, his classes and sub-

classes must all be distinctly characterized; they must be all-comprehensive and contradistinct (or opposed); and his divisions must therefore have been performed in the contradictory bifurcate mode.

It may be objected, that, if a genus be divided into any number of species, such characters may be given to them, as that each shall be distinguished from all the others, and that, when taken together, they shall comprehend the whole of the individuals included in the genus. This certainly may be done, and *is* done; but, if the process be analyzed, it will be found, in such cases, to be, in fact, the same mode of contradictory bifurcation expressed in another form. For the characters to answer the purpose of distinguishing a species, that species must be successively compared with *all* the others, and a property must be mentioned by which it is distinguished from *each* of them. The species is then constituted by the coexistence of these properties, and all the other species are mentally combined into *one* second species, characterized by the absence of any one or more of these properties.

Let us again take as an example the above-mentioned class of vertebrated animals, and di-

vide it into four subclasses or species, thus characterized :

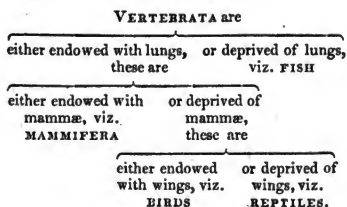
Mammifera.—Vertebrata endowed with mammæ and with lungs.

Birds.—Vertebrata deprived of mammæ, but endowed with lungs and with wings.

Fish.—Vertebrata, deprived of lungs.

Reptiles.—Vertebrata, deprived of mammæ and of wings, but endowed with lungs.

This division is complete and its species are distinct; but only because it is, in fact, the result of three successive divisional operations, carried on according to the contradictory bifurcate mode, as may be seen by reducing it to the following tabular form :



It must be carefully remembered, that these observations apply to the logical division of collective entities only, not to the analytical divi-

sion of individuals. Analysis, not being performed by the attribution of properties, the above contradictory formula cannot be applied to it; as was attempted by Reid and Kaimes, when they endeavoured to cast ridicule on this mode, by dividing England into Middlesex and that which is not Middlesex; that which is not Middlesex, into Kent and that which is not Kent, &c. *Middlesex, Kent, that* (that is, *that part of England*) *which is not Middlesex*, &c. are not properties, but names of individual entities.

The advantages and importance of this contradictory bifurcate division being fully detailed and exemplified in the Essays on Nomenclature and Classification* above alluded to, I shall not, for the present, proceed any further with this subject.

* In the English work (Chrestomathia), in a synoptical table of the principal branches of art and science, this mode of division was pursued to a considerable extent; and, in the French Essai, I carried it, in some instances, still farther. At the same time, single-worded, or, at any rate, two-worded denominations were given at every stage to each of the species formed. As these names were necessarily derived from a foreign language, (for the purpose of comprising them in the compass of one or two words), they have, for the most part, a harsh and barbarous appearance; a circumstance which

V. The mode of division, as well as its sources, being determined, the next and last consideration relates to the *extent* to which it is advisable to carry the successive subdivision of the subject-matter. The further it is carried, the more complete is the idea entertained of the aggregate ; but, at the same time, the labour, both of the operation itself, and of the conception and retention of the distinctive characters of the several species, is increased in proportion to the number of those species. The point where contradictory bifurcation should cease, and multi-

may tend to throw discredit upon the system of division which is there adopted, though it be entirely unconnected with that system. It might have been better, in framing the above-mentioned table, to have omitted those adjective appellations derived from the Greek, and usually terminating in *scopic* ; and, in some instances, even the substantive appellations of several of the branches do not appear to have been necessary ; as, for example, *Anoopneumatology*, all those which commence with *Parono* and *Prostheno*, &c. The advantages, as well of the distinctness and all-comprehensiveness of the divisional operations, as of the introduction of denominations, such as *Somatology*, *Pneumatology*, *Posology*, *Physiurgics*, *Anorganology*, *Noology*, &c. would have been more readily perceived, had these denominations been abstracted from all others which, as above, might be considered as superfluities.

furcate division (which is, in fact, mere exemplification) take its place,—as well as that where even multifurcate division should stop altogether,—are considerations which must be determined, upon each occasion, with reference to the particular object in view. They will, of course, depend upon the comparison of the advantages gained by, with the inconveniences of, the operation.

The species resulting from the last subdivisional operation performed upon any subject-matter, is termed, with relation to the superordinate aggregates, the *infima* or *lowest* species. But this can only be said with reference to the particular object in view ; for, generally speaking, as it has already been shewn, there is no such thing as an infima species, as any one, however low, is susceptible of still further subdivision.

To return to Dr. Whately's Elements. In the view which this author has taken of the present subject in the short section* he has devoted to division, he gives three rules for division, which have already been examined. Of the above-mentioned

* See Elements, Ch. II. Part I. § 6. Division, p. 68.

five necessary considerations, he mentions but the *source* of division with reference to the *purpose* in view. I can discover nothing which relates to methodization in general, nor to any particular modes of division, except that he generally distinguishes Logical from Physical (or analytical) division.

As to his explanation of the figurative expression of the “genus containing its species*,” it might perhaps be considered in a somewhat different light. The names *genus* and *species* are not usually given absolutely to the *aggregate of characteristic properties* (as it is implied by Dr. Whately), but figuratively to the aggregate of the individuals possessed of those properties, and considered with relation to those properties only. In this sense the genus (that is, the indefinite number of individuals represented by the name of that genus) is formed of the *sum* of the several species (that is, of the several indefinite numbers of individuals represented by the names of those species), and it therefore may well be said to *contain* those species.

* See *Elements*, p. 70.

CHAPTER VIII.

ON PROPOSITIONS*.

(Whately's Elements, Ch. II. Part II. On Propositions, p. 75.)

WE now come to the theory of Ratiocination, and other subjects intimately connected with it. On this occasion I must claim additional indulgence with regard to any errors that may be detected in my observations, as the ratiocinative part of Logic had not yet been entered into by Mr. Bentham, in the above-mentioned MSS. I have on that account felt greater diffidence in exhibiting new systems wherever those established by Logicians appeared to be defective, and have been induced, on some occasions, to enter into

* The reader must bear in mind that it is *Logical* propositions only that are here spoken of. Mathematicians give the same name of *proposition* either to the whole of a mathematical argument, or to any particular assertion which they undertake to prove.

more details than the nature of the subject might, perhaps, otherwise have warranted.

Before entering upon the theory of deduction (or syllogistic ratiocination) Dr. Whately devotes the second part of his synthetical compendium to the exposition and classification of the various species of propositions, which are also the subject of the present chapter.

The author defines a proposition—1st, a “Judgment expressed in words.” 2dly, a “sentence indicative,” excluding demands and questions. I should rather say that *judgment*, in the sense in which it is here used, is synonymous to *proposition*, and that a *sentence*, not a *proposition*, is a “judgment expressed in words.” A proposition, I have already said (in speaking of the mental faculties), is the result of an exercise of the judicative faculty, which faculty is also occasionally designated by the same name, *judgment*. A sentence is the enunciation of a proposition by visible or audible signs. The two appear to me to be exactly coextensive in sense, only that in one case *ideas* are referred to, in the other case *words* only. But as ideas cannot be represented but by words, we are obliged, in speaking of a proposition, to have before our

eyes the very same object which we also call a sentence. Thence arises the confusion between these two words ; but a careful attention to the cases where each is made use of, will, I believe, prove that, in ordinary practice, when the *idea* is meant to be understood, the word *proposition* is made use of, and when the *physical expression* of the idea is referred to, it is by the word *sentence*.

To borrow an example from the work before us, let us take the proposition or sentence “ an intemperate man will be sickly,” p. 77. Call it a proposition, and we should say, it consists of three parts, viz. a subject, *an intemperate man*, a predicate *sickly*, and a copula *will be*. Speak of it in the character of a sentence, and you would say that it is composed of six words, viz. an article *an*, a substantive *man*, two adjectives, *intemperate* and *sickly*, an auxiliary verb *will*, and a verb in the infinitive *be*.

“ A sentence,” says Dr. Whately, is the “genus” of a proposition, and, consequently, more extensive in signification. This genus of his appears to contain three species, the *indicative* (that is, the enunciative), the *imperative*, and the *interrogative*. To the first of these alone he applies the term *proposition*.

Further on, he divides the same genus "sentence," into two species, the *absolute* and the *hypothetical*; a division which he says is also applicable to propositions, *because* it is a species of sentence. For the exposure of the fallaciousness of this argument, it may be necessary to quote the author's words, by means of which another conclusion may be drawn, directly contradictory to the above-mentioned limitation of the sense of the word *proposition*.

"Since the *substance* (*i. e.* *genus*, or material part) of a proposition is, that it is a *sentence*; and since every *sentence* (whether it be a *proposition* or not) may be expressed either *absolutely*, (as "Cæsar deserved death"), or under an *hypothesis* (as "if Cæsar was a tyrant he deserved death"), on this we found the division of propositions according to their *substance*; *viz.* into *categorical* and *hypothetical*." Elements, p. 76.

In the same manner we might say :

"Since the *substance* (*i. e.* *genus* or material part) of a proposition is, that it is a *sentence*; and since every *sentence* (whether it be a *proposition* or not) may be expressed either *affirmatively* (as "Cæsar deserved death,") or under an *interrogation* (as "did Cæsar deserve death?"), on this we

found the division of propositions according to their *substance*, viz. into *affirmative* and *interrogative*." And what then becomes of the exclusion of questions?

The fallacy of the above arguments may be more easily detected by reducing them to the following form* :

A proposition is a species of sentence.

A sentence may be divided into two species, the *absolute* and the *hypothetical*:

therefore

A proposition may be divided into two species, the *absolute* and the *hypothetical*.

This fallacy (according to my classification, Ch. XI of this Outline) belongs to the head of Obscure expression and to the species which I have denominated "Fallacies in extent."

* Or in the simple abstract form hereafter explained. Let X be a proposition, Y a sentence, A an hypothetical thing, B an absolute thing, we have

t X = p Y	and again	t X = p Y
p Y = p A		p Y = p B
therefore		therefore
p A = p X		p B = p X

Here it may be seen that no such conclusion can possibly be drawn from the premises, as nothing shews that it is the *same* part of Y that is referred to in both premises.

If propositions be defined, as above, "the immediate result of the exercise of the judicative faculty," questions would, of course, be included; as they are, in fact, the enunciation of the state of our mind with regard to the faculty of desire; of that species of desire of which the object is the acquirement of some particular information. "Did Cæsar deserve death?" is an abbreviation for the expression, "I desire to know whether Cæsar deserved death."

On account of these abbreviative forms used on the occasion of questions, commands, &c. I should say that propositions are either *simple* or *compound*; *simple*, when the two terms are both of them *names* of entities, single or many-worded, common or proper; *compound*, when one of the terms is a proposition, and the other, expressed or implied, some one of our psychical faculties.

Simple propositions are those which are denominated by Logicians *pure* and *categorical*.

Compound ones include Dr. Whately's *modal-categorical* propositions, as well as *commands* and *questions*, the affinity of which to the modal will readily appear from the analysis of the abbreviative forms of discourse.

Let us take the following examples, extracted from Dr. Whately's Elements:

Did Cæsar deserve death?

An intemperate man will *probably* be sickly.

In these instances, the interrogative form in the former, the word *probably* in the latter, are but abbreviations for propositions expressive of states of our mind, with relation to the propositions "Cæsar deserved death," "An intemperate man will be sickly;" and might be thus translated:

"I am desirous of knowing whether Cæsar deserved death"—an expression of the state of my faculty of desire, analogous to the simple proposition, "I am hungry;" that is, "I am desirous of food."

"I am believing in the probability* that an intemperate man will be sickly"—an expression of the state of my faculty of belief.

As to the proposition, "Brutus killed Cæsar justly," it is an abbreviative form for the following proposition:

The action of Brutus's killing Cæsar was a just action.

* I know of no verb or participle expressive of that degree of belief which answers to probability; an intermediate degree between conjecture and certainty.

A command may, in the same way, be called an expression of the state of the faculty of will.

It might be objected, that every proposition which I have called simple is the expression of absolute belief with relation to another proposition, and therefore not simple but compound. True it is, that absolute belief is generally implied; but, as it is not intended to be absolutely expressed, nor even, in many cases, *intended* to be implied, I should prefer considering as simple all propositions in which neither the state of the speaker's mind is expressed, nor yet the relation of the proposition with any other.

I have not mentioned hypothetical propositions, which, if they be propositions at all, should be referred to the class of compound ones. But I should only consider as such those which Dr. Whately subsequently calls conditional propositions, and of which I shall give an analysis, in speaking of the irregular forms of syllogistic arguments, in my next chapter.

As to the other species of propositions which are included amongst Dr. Whately's hypotheticals, and of which he gives the following example: "Cæsar was either a hero or a villain:" it appears to me to be nothing more than a simple proposition, of which "Cæsar" is the subject,

and the aggregate "hero and villain" the predicate.

Simple propositions are next divided by Dr. Whately into *affirmative* and *negative*, *universal* and *partial* (which word I should prefer to *particular*). Before I examine into these divisions, it appears to me necessary to define, more exactly than he has done, the nature of the several component parts of a proposition, reduced, for the purpose of deduction, to its most simple and regular forms.

Every simple proposition may be reduced to the expression of a relation between two ideas: the two ideas are represented by the two *terms* (subject and predicate): the relation itself by the copula.

The two terms must therefore be expressed by nouns-substantive, or by substantive locutions; the copula by the verb-substantive, with or without the addition of other words, according to the nature of the relation expressed.

The species of relation here referred to are those of identity and diversity*, and of logical

* The diversity expressed in logical propositions is always *absolute*, not *contingent*. *Resemblance* and *difference*, and other modifications of diversity mentioned in the classification of entities, are not taken into consideration in the syllogistic process. *Diversity* here signifies *non-identity*.

subalternation. These are the only ones which are taken into consideration in syllogistic arguments; the expression of every other relation whatsoever being included in the substantive names of the terms*.

* There is another species of relation,—or rather a modification of the relation of identity,—of which the expression is commonly included in the copula. This is that of *time*; but this relation is not taken into consideration in the process of logical deduction. The only precautions to be taken against being led into error by any modifications of time are, either that the identity be the same, in respect of time, in all the propositions which enter into a syllogism, or that that of the major premiss be general and indefinite; in which case, that of the conclusion must be the same as that of the minor premiss. For these reasons, the copula is commonly used in the present tense, as referring generally to any indefinite portion of time, or particularly to one point, which must always be the same in all the propositions of a syllogism. If the copulæ of all the propositions be in the past or the future tenses, no logical deduction can be made, unless the exact time be fixed by some such expressions as “always,” “at such a time,” “during such an operation,” &c.

Thus, in the syllogism, “A robber *is* a man pernicious to society; every man pernicious to society *is* a man deserving punishment; therefore, a robber *is* a man deserving punishment,”—the copulæ of all three propositions are in the present tense, as expressive of no particular portion of time. If we say, “Cæsar *was* a tyrant; tyrants *are* men deserving

These terms may be either both of them individual, or one of them individual and the other collective, or both of them collective.

I. If both terms are individual, the relation of identity and diversity is the only one that can be expressed, as logical subalternation refers only to collective entities. Identity is expressed by the copula *is*, diversity by the copula *is not*; as, for example, "Giovanni *is* John," "John *is not* Peter." An *affirmative* proposition is that which expresses identity; a *negative* one, that which expresses diversity.

II. A common name (that is, the name of a collective entity) has already been defined "a name given to the aggregate of an indefinite number of individuals." From this definition

death; therefore, Cæsar *was* a man deserving death,"—the minor premiss is in the past time; and, as the major is in the present indefinite, the conclusion is in the same past time as the minor premiss. But, if we say, "Cæsar *was* a tyrant," "Tyrants *will be* men deserving death," we cannot, syllogistically, deduce any conclusion from these premises, in which the two copulæ express two different portions of time; nor yet could we draw any logical conclusion, if the two propositions were "Cæsar *was* a tyrant," "Tyrants *were* men deserving death," unless some words were added to indicate that they both refer to the same portion of past time.

may be deduced the relations which a collective entity can bear to another collective entity, or to an individual; relations which have been termed relations of *subalternation*.

There cannot exist any identity between an individual and a collective entity; for the one is *always* definite in number, the other *never* is so; but there may or there may not be identity between the individual entity in question and some one of the individuals represented by the collective entity. The intimation that it is *some one individual contained in* the collective aggregate, and not the *whole* aggregate that is spoken of, is conveyed, in Latin, by the addition of the word *aliquis* to the name of that aggregate; as, for example, "*Aliquis* homo est Johannes." In English the same relation is differently expressed, according to whether the individual is placed first or last in the proposition. In the former case, the word *a* is prefixed to the common name; as, for example, "John is *a* man." In the latter case, it can only be done by prefixing some such many-worded expression as *some one*; for example, "Some one man is John."

III. In the case where both terms of a proposition are collective entities, identity and diversity may have place:

1. Between *any* individual referred to by one term, and *any* individual referred to by the other. Ex. The identity between equiangular and equilateral triangles.

2. Between *any* individual referred to by one term, and *any one of a part* only of the individuals referred to by the other. Ex. The identity between men and animals.

3. Between *any one of a part* only of the individuals referred to by the one, and *any one of a part* only of the individuals referred to by the other term. Ex. The identity between quadrupeds and swimming animals.

Wherever a term is intended to be applied to *any* individual referred to by a common name, that term is called *universal*. Wherever it is intended to be applied to *any one of a part* only of such individuals, the term is called *partial*.

In affirmative propositions, *universality* is ascribed, to the first term by the prefixing to the common name the words *every* or *any*, to the second term by the word *any*; but, in the latter case, it seems necessary to express identity more distinctly than by the simple copula *is*; by some such expression as *is the same as*. In the same propositions, *partiality* is ascribed to the first

term by the words *some* or *some one* (in Latin, *aliquis*); to the last term by the same words when the first term is partial; by the word *a* when the first is universal. Ex.

Every horse (universal) is *a* quadruped (partial).

Some quadrupeds (partial) are *some** flying animals (partial).

Every equiangular triangle (universal) is the same as *any* equilateral triangle (universal).

In negative propositions, universality is ascribed in the same manner; as also partiality to the first term; but, in the case of the first term being universal, the negative sign (in the English language) must be combined with the sign of extent of the second, in order to avoid ambiguity. Ex. gr.

Every horse (universal) is *no* cow (partial or universal).

Some quadrupeds (partial) are not flying animals (partial).

* The idea is usually conveyed by putting the term in the plural, without any prefix; but then partiality is rather implied than expressed; and, on some occasions, for the purpose of logical accuracy, it may be found necessary to express, as above, the prefix *some*.

Every equiangular triangle (universal) is the same as *no* isosceles triangle (universal or partial).

If we were to say, Every horse is *not* a cow, it might also imply that *some* horses *are* cows.

Every individual entity being incapable of logical division, and therefore of being expressed *partially*, is logically considered as an universal term.

Simple propositions, considered in regard to the above relations, may therefore be either affirmative or negative; and each term may be either universal or partial. These propositions are therefore reducible to the eight following forms, in which, in order to abstract every idea not connected with the substance of each species, I have expressed the two terms by the letters X and Y, their identity by the mathematical sign =, diversity by the sign ||, universality by the words *in toto*, and partiality by the words *ex parte*; or, for the sake of still farther brevity, by prefixing the letters t and p, as signs of universality and partiality. These forms are,

- | | | | | | |
|----|-----------|---|------------|----|------------|
| 1. | X in toto | = | Y ex parte | or | t X = p Y |
| 2. | X in toto | | Y ex parte | or | t X p Y |
| 3. | X in toto | = | Y in toto | or | t X = t Y |
| 4. | X in toto | | Y in toto | or | t X t Y |

- | | |
|-----------------------------|---------------|
| 5. X ex parte = Y ex parte | or p X = p Y |
| 6. X ex parte Y ex parte | or p X p Y |
| 7. X ex parte = Y in toto | or p X = t Y |
| 8. X ex parte Y in toto | or p X t Y |

But, as in all equations, it matters not which member is expressed first, the two last of these forms are identical with the two first, and may therefore be omitted; it being more common, as well as more convenient, to express the universal term before the partial one. The second form may also be suppressed, as the fourth expresses the same idea in a manner more convenient for the deductive process. For, if *all* the individuals represented by X be different from *any* portion of those represented by Y, they must be different from *all* of those represented by Y.

We shall therefore reduce these forms to five.

- | | |
|--|------------------------|
| 1. X in toto = Y in toto | or t X = t Y |
| 2. X in toto = Y ex parte | or t X = p Y |
| 3. X in toto Y { in toto or
ex parte | or t X { t Y
p Y |
| 4. X ex parte = Y ex parte | or p X = p Y |
| 5. X ex parte Y ex parte | or p X p Y |

Logicians in general make no mention of the first form, which they consider as useless, and they say that the predicate (or second term of

a proposition) is *never distributed* * (that is, *universal*). I should think however; that this assertion can scarcely be logical. Many fallacies arise from the considering terms as synonymous which are not so in reality ; and it may be found as advantageous to reduce perfect identity to a logical form ; as partial identity, or perfect or partial diversity.

The other four of the above forms of propositions are usually designated by the four letters, A, E, I, and O, and are called *universal* or *partial*, according to the extent of the first term, which rule is expressed by the following verses.

Asserit A, negat E, sed universaliter ambæ.

Asserit I, negat O, sed particulariter ambo.

But as the dependence of propositions upon one another, when reduced to the above forms, will always be self-evident, I should consider that the science would be much more simple, and at the same time less liable to fallacy, if the whole system framed by means of the changes rung upon these four letters were entirely omitted. I shall not therefore enter into any further details on

* Elements, p. 42.

the subject, but proceed to examine into the other species of propositions mentioned by Dr. Whately.

I perfectly agree with him that *indefinite* propositions should not be considered as a class in respect of quantity; but I should go still farther, and say that they are neither more nor less than a species of *ambiguous* propositions; and if we do not know, in any other manner, the exact sense in which an *indefinite* must be construed, that proposition in itself cannot clear up the ambiguity.

As to the division of the matter of propositions into *necessary*, *impossible*, and *contingent*, it might be as well to suppress it altogether, both as useless and, in the present instance, ill expressed. By employing these words in a sense so different from that which is usually attached to them, an appearance of something very learned and intricate is given to two propositions or rules, which we are told to bear in mind, but which really convey no information at all; and as to any other practical result that may be afforded by this division of propositions, I cannot find any exemplification of it in the work before me.

The two above-mentioned rules are as follows :

“ In necessary matter all affirmatives are true and negatives false ; in impossible matter, vice versa ; in contingent matter, all universals false, and particulars true.” p. 81.

“ In necessary and in impossible matter, an indefinite is *understood as an universal*. . . . in contingent matter, (*i. e.* where the terms partly (*i. e.* sometimes) agree and partly not) an indefinite is understood as a particular.” pp. 78, 79.

These rules may be thus translated into plain English, by the application of the author's own definitions to the technical terms he makes use of.

“ When two terms of a proposition agree essentially and invariably*, the assertion that they do agree † is a true one ; and the assertion that they disagree‡ is a false one ; when the two terms

* “ *Necessary* matter of a proposition—is the essential or invariable agreement of its terms.” Elements, Index, p. 337.

† “ *Affirmative*—denotes the quality of a proposition which asserts the agreement of the predicate with the subject.” Id. p. 333.

‡ “ *Negative* categorical proposition—is one which asserts the disagreement of its term.” Elements, Index, p. 337.

altogether disagree*, *vice versa*. When one term agrees *only partially*† with the other, the assertion that it agrees *wholly*‡ with that other, is a false one, and the assertion that it agrees *partially*§ with that other is a true one."

"When it is not expressed whether it be *wholly* or *partially*, that two terms agree or disagree, you are to understand these propositions according to their meaning. If it is meant that they should be universal, you are to understand them so, if it is meant that they should be partial, you are to understand them as such."

These rules might thus be still further simplified, "What is true, is true; and what is false is false;" and "If the meaning of a proposition is not expressed, you must guess at it." Is it worth while, for the sake of these simple truisms, to perplex the learner's mind with the above ab-

* "*Impossible*—the matter of a proposition is so called when the terms altogether disagree." Id. p. 336.

† "*Contingent*—the matter of a proposition is so called when the terms of it in part agree, and in part disagree." Id. p. 334.

‡ "*Universal Proposition*—is one whose predicate is affirmed or denied of the whole of the subject." Id. p. 340.

§ "*Particular Proposition*—is one in which the predicate is affirmed or denied of some part only of the subject." Id. p. 338.

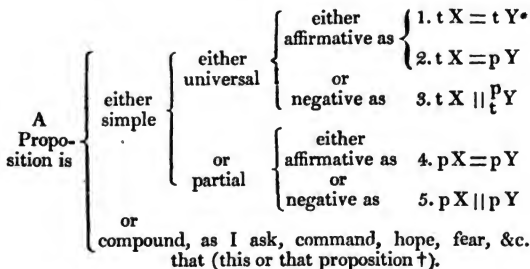
struse and complicated rules and unusual definitions?"

Dr. Whately speaks next of *singular* propositions,—those whose subject is a proper name (for a common name with a singular sign is nothing but a proper name), and which, as I have already said, may, logically speaking, be reckoned as universal. Yet, it is here asserted that “some may fairly be reckoned as particular (that is partial); and in support of this assertion, the three following examples are given: “Cæsar was not wholly a tyrant,” “this man is occasionally intemperate,” and “non omnis moriar.” In the first of these examples, the idea that the term *Cæsar* was a partial term, was probably suggested by the apparent resemblance between the words *whole* and *wholly*; but this resemblance is *physical*, not *logical*. The above proposition does not mean that a *part* of Cæsar was a tyrant and that *a part* was not, but that Cæsar was *sometimes* (or in some of his actions) a tyrant, and *sometimes* not. *Not wholly* in this proposition, like *occasionally* in the next, are expressive of modifications in *time*, a species of relation totally unconnected with those of logical subalternation, which the words *universal* and

particular or *partial* refer to, on the present occasion. As to the third example, “non omni-moriari,” the *non omnis*, forms logically one entire individual, viz. *my soul* or the *immortal part of me*,—in the same manner as, in the proposition “my head aches,” the term “my head,” though it be but a part of “me,” forms, logically, one entire individual.

If my reduction of propositions to the above-mentioned five formulæ, be adopted, the several rules of distribution, given in page 80 of the “Elements,” become useless.

The subject-matter of the two remaining sections of this Part II, viz. the dependence of propositions one upon another, may be more properly referred to the next chapter. I shall now, therefore, close my observations on propositions, taken singly, by the following synoptical table of their several species, as characterized and classed for the purpose of deductive argument.



* In the three first of these species of propositions, if X be an individual, the proposition is *singular* ; if X be a collective entity, the proposition is *general*.

The first proposition may be said to be expressive of absolute identity ; the third, of absolute diversity ; Nos. 2, 4, and 5, of partial identity and diversity.

† If these propositions were completed by a substantive term, not by a proposition, they would be simple, not compound. Thus, for ex. "I fear death," is a simple proposition, which may be thus reduced to its syllogistic form, "I am a person-fearing-death." But "Come here" is a compound proposition, which may be thus paraphrased, "I command that you come here." The latter part of this expression being an entire proposition, not a substantive location.

CHAPTER IX.

DEDUCTION,

OR SYLLOGISTIC RATIOCINATION.

(Whately's Elements, Ch. II. Part III. Of Arguments, p. 86.)

“THE third operation of the mind,” says Dr. Whately, “*viz. reasoning*, (or discourse) expressed in words, is *argument*.” p. 86. “An argument is an expression in which, from something laid down and granted as true (i. e. the Premises) something else (i. e. the Conclusion) beyond this must be admitted to be true, as following necessarily (or resulting) from the other.” p. 88.

“An argument stated at *full length*, and in its *regular form*, is called a *syllogism*” (p. 86.): “a syllogism” is “an argument so expressed, that the conclusiveness of it is manifest from *the mere force of the expression*, i. e. without con-

sidering the *meaning of the terms**." p. 88. From these definitions, it is evident that the words *reasoning*, *discourse*, and *argument* are not only confined to the deductive process, but that they only differ from single syllogisms by the loose and irregular mode of expression.

The various senses attached to the word *reasoning* have been spoken of in a former chapter of the present Outline; I have also adverted to the uselessness and inconvenience of considering the word *discourse* as a synonym to *reasoning*. It is only upon these two occasions (pp. 54 and 86) that Dr. Whately preserves this Aristotelian application of the word; for, in the rest of his work, he employs it in its ordinary English sense; as, for instance, in p. 87, "as is often done in *common discourse*," a few lines after having said, "Discourse expressed in words is argument."

As to the words *argument* and *syllogism*, which are more particularly the subject of the

* In the Elements, this definition, with that of an argument, are combined in the form of an argument of which one of the premises is, "since Logic is *wholly* concerned in the use of Languages." If this proposition had been entirely free from obscurity and ambiguity, the reader might have had at once the benefit of an example and a definition.

above definitions, the distinction which Dr. Whately here establishes between them is, that the one, the argument, may be expressed in any words whatever; the other, the syllogism, is an argument reduced to a certain regular form of expression. Thus the sense of the word argument is much further restricted than he himself probably intended; for it cannot include the Sorites, for instance, which he afterwards classes amongst "all arguments besides pure and categorical syllogisms."

It might be more convenient, however, to make use of this word *argument* in its more ordinary and far more extended sense; applying it to *any* ratiocinative operation, however complicated. The leading definitions which relate to the present subject might then be expressed as follows:

Every process of ratiocination, when expressed in language, is an *argument*.

A *syllogism* is a name given to every portion of an argument, which, without altering the sense, is reduced to that simple and regular form in which the absolute truth of a simple proposition follows necessarily from the exhibition of one or two other simple propositions, also regarded as absolutely true.

Every argument which is reducible to one or more syllogisms is a *syllogistic argument*. Whenever it contains doubtful propositions, or when the absolute truth of one proposition does not follow from the exhibition of the others, it is called an *inductive argument*.

“Every argument consists of two parts; that *which is proved*; and that *by means of which it is proved*; the former is called, *before it is proved*, the *question*; *when proved*, the *conclusion* (or *inference**) ; that which is used to prove it, if stated *last* (as is often done in *common discourse*), is called the *reason*, and is introduced by ‘*because*,’ or some other *causal* conjunction (e. g. ‘*Cæsar deserved death, because he was a tyrant, and all tyrants deserve death*’). If the conclusion be stated *last* (which is the strict *logical form*, to which all reasoning may be reduced), then that which is employed to prove it is called the *premises*; and the conclusion is then introduced by some *illative* conjunction, as ‘*therefore*:’ e. g.

‘All tyrants deserve death;
Cæsar was a tyrant;
 therefore,
He deserved death.’” Elements, pp. 86, 87.

* See hereafter, Ch. XI, on Induction, the distinction between inference and proof, &c.

The theory of Logic, in as far as it relates to deduction, consists in the reducing syllogistic arguments to the simple and regular form of syllogisms. This operation is generally considered as the only immediate object and practical result of the whole study of Logic: to this it is that Dr. Whately, through the whole course of his work, labours to restrict the field of that branch of art-and-science; and it is the apparent futility of this operation, as compared with the abstruse and complicated system invented by Aristotle for the effecting the purpose, that has brought so much discredit upon the name, as well as upon the study, of Logic in general.

I need not to repeat, upon this occasion, what I have so frequently said of the greater extension which I have given to the field of the science; but I must devote a few words to the refutation of the alleged inutility of the operation, which forms the subject-matter of the present chapter.

Few persons would probably consider the pursuit of so difficult a science as satisfactory, if convinced that it were of no other use than as an exercise to the mind; though, in the established course of education, much time and labour be devoted to no better purpose. This *exercise*

may be an advantage, attending upon this study, as well as upon any other; but it cannot be one of great weight in the scale of comparison of the various human sciences. If I had thought the importance of the theory of deduction had been derived from no other source, if I had even attached so much weight to such a consideration as appears to have been done by Dr. Whately*, I might perhaps have continued to follow Aristotle's ingenious contrivances so well suited for that purpose. But the exercise *required* of the mental faculties, in the pursuit of science in general, is already so great, that the object of the instructor must be rather to diminish that which is necessary, than to add to that which is otherwise useless. The utility therefore of the theory of deduction can only, on the present occasion, be derived from the means it affords for detecting

* "Even supposing that no practical improvement in argumentation resulted from the study of Logic, it would not by any means follow that it is unworthy of attention. The pursuit of knowledge on curious and interesting subjects, for its own sake, is usually reckoned no misemployment of time, and is considered as, incidentally, if not directly, useful to the individual, by the exercise thus afforded to the mental faculties." *Elements*, Preface, p. xi.

fallacies. Many are the occasions when an argument, by its lengthy and complicated form, exhibits apparent proof, and thereby produces conviction of a question which may be replete with error; when, if the argument were strictly analyzed, and if, at every step the proof were reduced to its simplest form, the various obscurities, ambiguities, and other devices made use of by the artful argumentator, would be detected, and the delusions he had created would at once disappear. This effect of the reduction of argument may have already been exemplified in the course of the preceding pages, upon one or two occasions where I have sought to point out the errors of some of Dr. Whately's arguments; and the general theory of the detection of fallacies will be more particularly the subject-matter of a future chapter. For the present, having stated this as the general object of the theory of deduction, I must now proceed to the details of that theory, and first to the analysis of a syllogism when reduced to its simplest form.

A syllogism consists of one or two simple propositions called *premises*, and of the *conclusion*, consisting in another simple proposition. The premises are stated first, and are connected

with the conclusion by means of the illative conjunction *therefore*. The conclusion is said to be *proved by* or *deduced from* the premises. The exhibition of the premises from which a conclusion is deduced is said to be the *proof* of that conclusion.

These several propositions must, each of them, be reduced to some one of the five simple forms which are exhibited in the preceding Chapter VIII; that is, they must consist of "two substantive terms with their respective signs of extent, and of a copula, expressive of the identity or diversity of those terms."

When there is but one premiss, the syllogism may be termed a *conversive syllogism*. In this case the terms of the conclusion are the same as those of the premiss: the difference consists in their transposition, as, for ex.

Some boasters are cowards,	or	$p X = p Y,$
therefore,		therefore,
Some cowards are boasters *		$p Y = p X.$

* For the better comparison of my system with Dr. Whately's, I have every where selected my examples of syllogisms from his Elements. I have also added the simple abstract forms to which they are reducible, expressing always the mean term



In transposing the terms, care must be taken not to change their sign of extent ; and it is in order to avoid this defect that the *extent* should always be distinctly expressed. If left to be understood, it is apt to be mistaken, and thereby to produce erroneous deduction ; as, for ex. it might appear that “ if cowards are men, men must be cowards ;” but if the *understood* signs of extent be *expressed*, this argument stands thus :

<i>All</i> cowards are <i>some</i> men,	or	$t X = p Y$,
therefore,		therefore,
<i>All</i> men are <i>some</i> cowards.		$t Y = p X$.

which is evidently no syllogism.

It might be objected that this rule has not been observed in the following syllogisms, where a term which is partial in the premiss is universal in the conclusion, viz.

No virtuous man is a rebel,	or	$t X p Y$,
therefore,		therefore,
No rebel is a virtuous man.		$t Y p X$.

But it has already been proved that, in a simple logical proposition, “ where two terms are separated by the letter Y, the extremes by the letters X and Z, X being the minor, Z the major, wherever this distinction has place.

rated by the sign of diversity, if the one be universal, the sense is the same whether the other be universal or partial." The first terms being universal in both these propositions, we may consider the last terms as universal also ; in which case we have the self-evident syllogism : $t X \parallel t Y$, *therefore* $t Y \parallel t X$.

This species of syllogism is, by Logicians, termed *conversion*, and is treated of by Dr. Whately under the head of Propositions, (Ch. II. Part II. § 4). Yet, from his own definition, as compared with that which he gives of an argument, it cannot but be considered as a species of argument. "No conversion," he says, p. 83, "is employed for any logical purpose, unless it be *illative*, *i. e.* when the truth of the converse follows from the truth of the *exposita*, (or proposition given.)" The only difference between this definition of conversion and that of argument, p. 88, is, that in the former case the *premiss* is called the *exposita*, and the *conclusion* the *converse*.

The exposition of what constitutes *illative* conversion, and conversion *by limitation*! or *per accidens*, which occupies the whole of p. 84, is so replete with technical phraseology, as to render

it difficult to discover its real object, which appears, however, to be no other than the following simple rule, that "in transposing the terms, their respective signs of extent must not be changed."

Conversion by negation, or contraposition (p. 85), is no syllogism, but merely one step taken in the reduction of a proposition to its simple form; it is merely the substitution of an affirmative instead of two negatives, or vice versâ, as, for ex. "every man is" for "no man is not." If this be considered a conversion; we may say that the whole operation of reduction of arguments is a series of conversions; and in this case every syllogism also must be considered as a step in the process of reduction. But this is not the sense which I should think it most convenient to attribute to these words on the present occasion. The reduction of an argument, I should say, is the successive substitution of strictly synonymous locutions, till each proposition be reduced to some one of the five simple logical forms. The syllogism (including the conversive syllogism) is the deduction of one such proposition from one or from two others.

When a syllogism consists of three propositions, there are two premises and a conclusion.

“ Every syllogism has three, and only three terms, viz. the two terms of the conclusion” one of which is contained in each of the premisses, and which are called the two *extremes*; and the *mean** term, which is the other term of each of the premisses, as, for ex. $t X = p Y$, $t Y = p Z$, therefore $t X = p Z$.

Where the mean term is universal in one premiss and partial in the other, the former premiss is called the major premiss; the latter, the minor premiss; and the two extremes are also termed major and minor, according to the premiss in which they are placed. Thus, in the foregoing example, “ $t X = p Y$ ” is the minor premiss, “ $t Y = p Z$ ” is the major premiss, X the minor term, Z the major term, and Y the mean.

Logicians usually say that *all* syllogisms have a major and minor premiss; but in the following example:

* I have preferred the word *mean* to that of *middle*, as being more familiar in an analogous sense in mathematical *ratios*, as well as for the sake of avoiding such expressions as *ambiguous middle*, *undistributed middle*, which occur so frequently in Dr. Whately's Elements.

All wits are dreaded,	or	$t Y = p X,$
All wits are admired,		$t Y = p Z,$
therefore,		therefore,
Some who are admired are dreaded.		$p Z = p X.$

which is the major and which the minor premiss ?

Observe, that in every syllogism the terms must be so arranged that, where their *extent* is different, the universal is mentioned *first*, the partial *last*.

The five species of simple propositions, as given in the table at the end of my last chapter, may be combined three by three in a variety of ways by transposing the terms, and by changing the signs of extent, or those of identity or diversity. Nineteen of these combinations have been separately designated by Logicians by a set of appellations thus collected into five Latin verses :

Barbara, Celarent, Darii, Ferioque prioris,
 Cesare, Camestres, Festino, Baroko secundæ.
 Tertia Darapti, Disamis, Datisi, Felapton,
 Bokardo, Feriso, habet. Quarta insuper addit
 Bramantip, Camenes, Dimaris, Fesapo, Fresison.

and a variety of rules, more or less complicated or incomprehensible, have been invented, to shew in what cases each of these combinations

produces a legitimate syllogism. Dr. Whately has in some measure simplified this system, and rendered it more intelligible to the student; still however preserving the greater part of it. But, if every legitimate syllogism must, by the definition of the word, be self-evident without the help of these rules, might we not suppress altogether a system which requires so much labour to understand it, so much strain on the memory to keep it in mind, and which, after all, rather takes away from, than adds to, this self-evidence? Might not we substitute a few plain and simple axioms, the truth of which cannot be denied, and which may be found to contain, in general terms, every principle upon which a syllogistic conclusion can be founded? Such may, perhaps, be found the four following :

1. Things which are equal to the same, are equal to one another.
2. When of two things, one only is equal to a third, and the other is not equal to that third, these two things are not equal to one another.
3. Parts of a part are parts of the *whole* of that part (that is, of the whole of which that part is a part).
4. When the whole of a class is said to be

equal to, or different from, the whole or any part of another class, it is meant that *every* individual referred to by the first class, is the same as, or different from, any individual referred to by such whole or part of such other class.

The first two of these four axioms are given by Dr. Whately as “axioms or canons, by which ‘the validity’ of all pure categorical syllogisms are to be proved,”—in the following words:

1. “If two terms agree with one and the same third, they agree with each other.” 2. “If one term agrees, and another disagrees with one and the same third, these two disagree with each other.”

But these two axioms, thus expressed, are only applicable to those syllogisms in which the mean term is universal in both premises; for it is then only that the two extremes are precisely equal to the same *mean*. Take, for instance, the syllogism “Every X is a Y, every Y is a Z, therefore, every X is Z.” If we prove it by the first of the above axioms, and say, that the two terms X and Z agree both with the term Y, therefore they agree with one another, and do not take into account the signs of extent, we should then be obliged to admit the truth of the

syllogism—an X is a Y, a Z is a Y, therefore an X is a Z, which is evidently false, though strictly conformable to Dr. Whately's canons, of which he says "no categorical syllogism can be faulty, which does not violate these canons."

It is true that, in page 92, he attempts to explain away this difficulty by saying that, in the case of the mean term being universal in one premiss and partial in the other, "if one extreme has been compared to a *part* of the middle term, and another to the *whole* of it, they must have been both compared to the *same*." But what is meant by the word *same*? to what substantive is this adjective *understood* to be applied? Certainly not to the same substantive, which is understood in the axiom. *There* it is a *term*. *Here* it cannot but be "some particular portion of the collective entity designated by the mean term"—which is a very different thing. *There* he says, "When two *terms* agree with the same third" (understand *term*). *Here* he says, "if one extreme be compared to a *part* of the middle term, and another to the *whole* of it, they must have been compared to the same" (understand *part* of the middle term).

It is in order to obviate all these difficulties of

expression with regard to the concordance and disagreement of collective entities, that I have thought it necessary to modify the expression of Dr. Whately's two axioms, and to add two others, the last of which may perhaps be considered rather as an explanation of the relations of collective entities to one another, than, strictly speaking, as an axiom.

In order to show the all-comprehensiveness of these rules or axioms, in as far as they relate to syllogisms, it might not appear irrelevant, if I were to exemplify them in the case of some of the syllogisms given by Dr. Whately in his § 4 and 5, as examples of the "Barbara" forms. I shall, therefore, after quoting each of these syllogisms in the form in which it is exhibited in the Elements, reduce it to the simple forms above described, subjoining, on each occasion, the simple general expressions of the several propositions of which it is composed.

1. *Barbara*. "He who possesses prudence, possesses all virtue; He who possesses one virtue, must possess prudence; *therefore*, He who possesses one, possesses all*." p. 99.

* This example appears to be rather unfortunately chosen, as, by the nature of the premises, prudence is assumed to be

Every man-possessing-prudence is a } man-possessing-all-virtue ;	or $t Y = p Z$
Every man-possessing-one-virtue is a } man-possessing-prudence ;	$t X = p Y$
therefore,	therefore,
Every man-possessing-one-virtue is a } man-possessing-all-virtue.	$t X = p Z$

2. *Darapti*. “All wits are dreaded ; All wits are admired ; therefore, Some who are admired are dreaded.” p. 101.

Every wit is a person-admired ;	or $t Y = p X$
Every wit is a person-dreaded ;	$t Y = p Z$
therefore,	therefore,
Some persons-admired are persons-dreaded.	$p Z = p X$

3. *Darii*. “All wits are dreaded ; Some who are admired are wits ; therefore, Some who are admired are dreaded.” p. 102.

Every wit is a person-dreaded ;	or $t Y = p Z$
Some persons-admired are wits ;	$p X = p Y$
therefore,	therefore,
Some persons-admired are persons-dreaded.	$p X = p Z$

4. *Camestres*. “All true philosophers account virtue a good in itself ; The advocates of pleasure do not account virtue a good in itself ; therefore, They are not true philosophers.” p. 102.

perfectly synonymous to virtue, which is seldom or never the case, at least in the English language.

Every true-philosopher is a person-ac-	}	or	$t X = p Y$
counting-virtue-a-good-in-itself ;			
Every advocate-of-pleasure is no person-	}		$t Z \parallel p Y$
accounting-virtue-a-good-in-itself ;			
therefore,			therefore,
Every advocate-of-pleasure is no true-	}		$t X \parallel p Z$
philosopher.			

5. *Baroko*. “Every true patriot is a friend to religion ; Some great statesmen are not friends to religion ; therefore, Some great statesmen are not true patriots.” p. 102.

Every true-patriot is a friend-to-religion ;	}	or	$t X = p Y$
Some great-statesmen are no friends-to-religion ;			
therefore,			therefore,
Some great-statesmen are no true-pa-	}		$p Z \parallel p X$
triot.			

6. *Bokardo*. “Some slaves are not discontented ; All slaves are wronged ; therefore, Some who are wronged are not discontented.” p. 103.

Some slaves are no discontented-persons ;	}	or	$p Y \parallel p Z$
All slaves are wronged-persons ;			
therefore,			therefore,
Some wronged-persons are no discon-	}		$p X \parallel p Z$
tented-persons.			

These examples will probably suffice to show the uselessness of thus distinguishing syllogisms into so many *moods* and *figures*, as these “Barbara” species are called. The operation of re-

duction, which is the same in all cases, is all that is necessary; as, when thus reduced, all syllogisms are equally self-evident. It might be objected, that so complete a reduction is a complicated and tedious operation; but is not this operation equally necessary in the “Barbara” system? Dr. Whately, it is true, does not always exhibit his syllogisms in this reduced state; his terms are sometimes in the verbal form (being combined with the copula), sometimes in the adjective, &c.; but does he not suppose them to be *mentally* reduced to the substantive form? Is not this regularity of form the *character* he gives of a syllogism? Thus, when he has given as a premiss, “All wits are admired,” and has occasion to introduce the same term “admired” into the conclusion, he is obliged to express it substantively, transforming it to “Some who are admired,” and leaving to his readers the task of verifying the exact identity of the two terms. The syllogism would have been much clearer, and certainly not *more* complicated, if so much so, if this term had been, from the first, expressed substantively.

As to the six or seven rules for trying syllogisms, the theory of moods and figures, the

ostensive reduction, the *reductio ad impossibile*, and the indications conveyed by the consonants employed in the “Barbara” verses,—contained in sections 2 to 7 of this part of Dr. Whately’s Elements, as well as the theory of opposition explained in § 3 of Part II,—all these are, no doubt, very ingenious contrivances, and indicate great powers of mind on the part of the Grecian Philosopher who invented them. But, if mere reduction, with the help of the above four axioms, be found to answer the purpose, and to be sufficiently clear and comprehensible, this whole Aristotelian system might henceforth be very properly consigned to oblivion, as tending rather to conceal than to expose fallacies, to impede, rather than to assist, fair intellectual argument. There only remains now therefore to examine into the mode of reduction of the various irregular arguments which are treated of in the Supplement to Part III of Dr. Whately’s *Synthetical Compendium*.

Arguments, in common discourse, are frequently exhibited *at full length*; that is to say, that the premises, as well as the conclusion, are *all* expressed: in this case, all that remains to be done for their reduction is to place the several

propositions in their proper order, and to reduce these propositions themselves to their respective simple forms.

The subject of a proposition is, in the English language*, usually expressed substantively, and is what is called the *nominative* of a sentence; the infinitive† of a verb being also included amongst substantive expressions. In this case, the only difficulty is in the sign of extent, which in common discourse is frequently omitted, but which, in a logical argument, must be distinctly exhibited, in order to prevent its being misunderstood.

The predicate of a proposition is frequently expressed by adjectives, verbs, or other parts of speech, complicated in sense, though abridged in form.

The adjective, being expressive of a characteristic property of the subject, must be reduced to the substantive form by the addition of the superordinate genus of the subject, with the sign

* In Latin, the expression called *ablative absolute* is an entire proposition, of which the substantive is the subject, the adjective or participle the predicate, and the ablative form implies the copula, which is *understood*.

† See Whately's Elements, p. 58.

of partiality. Thus, in the proposition "Crassus is rich," the adjective predicate *rich* may be transformed into the equivalent substantive expression *a rich man* by the addition of *man*; the name of a superordinate genus of *Crassus*, with the sign of partiality *a*.

The verb is generally a combination of the copula with the whole or part of the predicate. By substituting the corresponding participle with the ordinary copula, the predicate is separated, and converted to the adjective form, from whence it is reducible to the substantive by the foregoing rule; as, for example, "He preaches," reduced first to "He is preaching," and lastly to "He is a man-preaching;" "He possesses virtue" to "He is a man-possessing-virtue."

As a verb generally expresses some modification of *time*, particular attention must be paid, in this reduction, not to alter the sense in this respect. Thus, if the proposition "He spoke to me" were to be reduced to "He was speaking to me," the particular modification of time would be altered, unless it were limited by some such expression as "at that particular time, &c*."

* See above, note, p. 128.

Wherever negatives occur in a proposition, they must be reduced to the single sign of negation *attached to the copula*, or else they must be *included in the substantive term*, not *attached to it*; for, in that case, they would render it adjective. Thus, in the proposition "Plants are not animals," *not* must be considered as attached to the copula; for, if we were, by what is called *conversio per accidens* (see *Elements*, p. 84), to attach the *not* to *animals*, the term *not-animals* becomes adjective, the superordinate genus must be added, and the proposition thus reduced becomes "Every plant is a being-not-animal." All negative propositions might thus be reduced to affirmatives; but it appears to be a useless complication. Where two negatives, however, occur in a proposition, the corresponding affirmative should be substituted; as "No man is not an animal," reduced to "Every man is an animal."

With regard to such arguments as are not, in common discourse, expressed at full length,—that is to say, those of which one or more propositions are omitted, or combined with others, in the several syllogisms of which these arguments may consist,—they form the subject-matter of Dr. Whately's Supplement to Part III, entitled

“Of Modal Syllogisms, and of all Arguments besides regular and pure Categorical Syllogisms.” Under this head he comprehends—1, Modals; 2, Hypotheticals, including Conditionals, Disjunctives, and the Dilemma; and 3, Enthymeme, Sorites, &c.

As to modals, he speaks only of modal *propositions*, although he thus classes them under the head of *syllogisms*. These propositions have been analyzed in a former chapter.

With regard to hypotheticals, propositions and syllogisms are also, in some measure, confounded together in the Elements. A hypothetical proposition is there defined “two or more categoricals united by a copula (or conjunction).” Amongst these conjunctions are the *causal*. In page 86 we learn that a syllogism consists of three categorical propositions, united by a causal conjunction. Might we not, from these premises, draw the conclusion, that a syllogism is a hypothetical proposition?

According to my view of the subject, the denomination of hypothetical proposition should be restricted to those which Dr. Whately terms *conditional*. The hypothetical proposition may therefore be considered as a “Compound propo-

sition, in which both terms are exhibited in the form of propositions, and in which doubt is expressed,—not as to the *relation* of the terms,—but as to the existence of one of the terms,—or rather, in which it is intended to assert the relation alone, and not to express any judgment upon the truth of the existence of the subject.

Thus, for example, in the hypothetical proposition, "If A is B, C is D,"—thus reduced to the form of a categorical proposition, "The case of A being B, is a case of C being D"—the relation of dependence is expressed between the circumstance of "A being B," and that of "C being D;" but it is not asserted either that A is B, or that C is D.

A hypothetical syllogism is that in which one of the propositions is hypothetical, as, "If A is B, C is D, but A is B, therefore C is D," thus reducible to the ordinary form :

The case-of-A-being-B	is a case of-C-being-D,	or	$t Y = p Z$
This case is a case of-A-being-B,			$t X = p Y$
	therefore		therefore
This case is a case of-C-being-D			$t X = p Z$

The disjunctive proposition, " Either A is B or C is D," contains two hypothetical propositions : " If A is B, C is not D," and " if C is

D, A is not B," only one of which is necessary for the syllogism of which it forms a premiss.

The complex hypothetical argument, the dilemma, and the hypothetical sorites, are all reducible to several hypothetical syllogisms, and thence to the ordinary forms, as explained by Dr. Whately. But in the case of all these combinations of hypothetical syllogisms, their validity being much more evident in these abridged forms than in any other, their reduction, in practice, would be entirely useless. What has here been said on the subject, has only been for the purpose of distinguishing them from such as require reduction.

The enthymeme, when exhibited as an argument, should always be completed for the purpose of ascertaining what is the suppressed premiss. Arguing from a premiss which is left to be understood by every hearer as he pleases, will, of course, and frequently does, lead to fallacious conception, the avoiding of which is the object of the theory of deduction.

An enthymeme expresses nothing but one premiss, and a conclusion which does not follow from that premiss alone. It therefore does not express a syllogism, but merely a compound pro-

position, of which both terms are single propositions, and which differs from the hypothesis by the assertion it contains of the truth of these elementary propositions ; that is, of the truth of the existence of the terms which they constitute. When we say, "Cæsar was a tyrant, therefore he deserved death," one of these propositions does not follow from the other, and therefore it is no argument, but merely a compound proposition.

But if we suppose a tyrant to have been defined "a person deserving death," which is the same as if we suppose there to be another premiss, "All tyrants deserve death," thus reduced, "Every tyrant is a person deserving death," the enthymeme becomes a syllogism of which this premiss is understood.

The use of these distinctions is to avoid a very frequent fallacy arising from the use of the enthymeme. By this form an appearance of argumentation is often given to a single assertion ; the conclusion may *appear* to be the result of the expressed premiss, the truth of which may be incontrovertible ; but when you come to examine what *must* be the *understood* premiss, in order to form such a conclusion, you will often find that

it is one of which the truth is very doubtful, not to say absolutely impossible.

The *sorites* (Elements, p.122) might be easily reduced to a regular series of syllogisms, were there any use in the operation. The *enthymematic sentence* (p.124) is one in which a pronoun is used for a noun ; at least in the author's example ; for I cannot conceive that, in the proposition, " All useful studies deserve encouragement, Logic is *such*," *such* is any thing but a pronoun referring to *useful studies* ; nor can I conceive that any such proposition as " since it helps us to reason accurately" is implied or understood.

Induction (Elements, p.123) forms the subject-matter of my next chapter.

The *syllogisms apparently incorrect*, which conclude this section of the Elements, relate only to the "Barbara" system. If a syllogism has been defined an " argument of which the validity is *evident* from the mere force of the terms," it is difficult to conceive a syllogism *apparently* incorrect.

In concluding the present chapter, Dr. Whately reverts once more to the great extension of the field of Logic, of which he accuses logicians in general ; a topic which has been too often discussed to be again entered into at present. His

mention of it is on the occasion of introducing the chapter on Fallacies : an important one in the ratiocinative part of Logic. But this is a subject of which I must defer the consideration till after having treated of Induction ; as fallacy in argument applies to the inductive as well as to the deductive operation.

CHAPTER X.

INDUCTION.

(Whately's Elements, Province of Reasoning, Ch. I. Induction,
p. 207.)

THE next mental operation, which, according to the general view I have taken of the field of this science, comes under the head of Logic, is that of *Induction*, which may be thus characterized : “ From the existence of a fact, or from the occurrence of a phenomenon, certain or probable, in any one case or in several similar cases, the inferring that a similar fact or phenomenon has place in some other analogous case.” Whatsoever *general* rules can be given, as to the degree of probability of the data or premises, as well as to that of the conclusion or fact inferred,—such rules form the subject-matter of the theory of induction.

This operation is, by Dr. Whately, excluded from the province of Logic, and only treated of

incidentally, in his *Elements*, as a subject connected with Logic. He therefore has not thought it necessary to give a regular definition of the word *induction* ; but the meaning he attaches to it (when different in sense from deduction or syllogistic ratiocination) may be gathered from the following passage :

“Whether the induction (in this last sense*) has been sufficiently ample, *i. e.* takes in a sufficient number of individual cases,—whether the character of those cases has been correctly ascertained—
—and how far the individuals we have examined are *likely to resemble*, in this or that circumstance, *the rest* of the class, &c. &c., are points that require indeed great judgment and caution ; but this judgment and caution are not to be aided by Logic, because they are, in reality, employed in deciding whether or not it is fair and allowable to *lay down your premises* ; *i. e.* whether you are authorised or not, to assert, that what is true of the individuals you have examined, is true of the whole class, and that this or that *is* true of those individuals.” p. 210.

* That is, when it cannot be stated syllogistically.

The above is not an incorrect general exposition of the operation of induction ; and, true it is, that this operation cannot be of any practical use without applying it to some particular subject, and that then, the correctness of the operation “ cannot be decided without a competent knowledge of the nature of the subject.” But it may be useful, in a general point of view, to know in what that competent knowledge consists,—in what light the several subject-matters of induction must be considered for the purpose of that operation, and,—as induction cannot (as has been already stated) produce a conviction of absolute certainty, but only of probability to a greater or less degree,—what are the best means of ascertaining that probability. And these several investigations of the process of enquiry, or *rules of induction*, might, I should think, with no great impropriety, be considered as a portion of the study of Logic.

And if it has been shown that syllogistic deduction also cannot be of any practical use without applying it to some particular subject,—if, moreover, it has been proved that it cannot be performed with accuracy unless the terms shall

be free from ambiguity or obscurity, and shall be exactly defined in point of extent,—and if these qualifications cannot be given to the terms without a competent knowledge of the nature of the subject,—then it may probably be admitted that deduction, as well as induction, consists only in “general rules for the most advantageous application of a mental operation, whatever may be the nature of the subject to which it is applied.” And in such case, it may not appear quite clear, why the deductive process should, in preference to the inductive, claim the sole right to the common denomination of *Logic*.

Dr. Whately insists much upon the erroneousness of the prevailing idea, that there are two kinds of reasoning ; for he conceives that that portion of the inductive operation which may be called reasoning is in fact syllogistic ; that is, that if two premises are *granted* as true, the conclusion *must* be true. But how many cases are there not where the absolute truth of the premises is not granted, or where that of the conclusion does not certainly follow from such premises, and yet where a certain degree of reasoning has place ? No one fact, no occurrence, nor

even the existence of any thing which does not come immediately under our own observation, can be proved by syllogism alone, though founded on observation, without the help of induction. Suppose A tells me that a certain event has occurred, if I have always found that A has told the truth whenever I have had opportunities of verifying his assertions, if there is nothing in the event in question in contradiction to what I myself have observed in analogous cases, may I not infer that that event has in fact occurred? Is not this *reasoning*? Is it not an argument? And can it be reduced to a syllogism? Are there here “two (and only two) premises from which the truth of the conclusion *follows by the mere force of expression?*” If these questions be answered in the negative, it can scarcely be possible to agree with the author, who asserts that there are not two species of reasoning, the inductive and the syllogistic.

This assertion is attempted to be explained by saying that when *induction* is *reasoning*, it is a syllogism in which the major premiss is not expressed but understood. Thus he would probably convert the above example to the following syllogism :

A tells me that a certain event has occurred,
A *always* tells the truth*,
therefore,
That event has occurred.

But this is nothing to the purpose. I do not intend to assert that A *always* tells the truth, so that I cannot absolutely *prove* that the event he tells me of has really occurred; yet I wish to infer the very great *probability* of it, and this I do by the above-mentioned *induction*, not by any *syllogism*.

In the general survey I had taken of the field of Logic with a view to my Treatise, I purposed devoting a chapter of that work to the exposition of the considerations upon which the validity of an induction appear to depend. I shall now attempt to give an outline of these several considerations, but without any pretensions to completeness. The subject appears to me to be new: it had not even been treated of in Mr. Bentham's

* In this exemplification of Dr. Whately's system, I have considered the assumption of this premiss as warrantable; it appearing to me to be strictly analogous to the assumption of the premiss "Nature is uniform in her operations," in the analogous instances he gives in his Elements, p. 243.

MSS.; and it is on account of the diffidence I feel with regard to my own view of it, that I must, for the present, refrain from entering into minute details.

Induction appears to consist in the resolution of the following problem :

A fact or phenomenon having probably taken place in a certain number of cases, how far is its occurrence probable in a certain other case ?

The answer appears to depend on the combination of the following considerations :

I. Ascertainment of the degree of probability of the *data*.

II. Generalization of the *data*.

III. Application of the general rule to the case in question.

I. Ascertainment of the degree of probability of the *data* ; that is, of the facts or phenomena which have been observed to have taken place in a certain number of cases.

This operation, (the judgment pronounced on the occasion as to the belief in those data), may be founded on *personal observation*, on *testimony*, or on *previous induction*; three elements, which by some writers are collectively designated by the denomination of Evidence ;

taking this word in the most extensive sense of which it is susceptible.

1. *Personal observation* of a fact, that is, the perception of it by means of the senses, is that which in most cases produces the highest degree of belief in the mind of the observer. The probability in these cases is so nearly equivalent to certainty, that it requires a very strong combination of other sources of inference to produce any doubt; and scarcely any thing but contradictory observation, or inductive proof founded on personal observation, will destroy the probability. Thus, when a spherical body, placed in a glass of water, appears to me to be oval, if I had never observed myself that the body was in fact spherical, or had never inferred it from analogous observations of my own (such as that other bodies placed in a glass of water alter their apparent form, &c.), I should not, perhaps, believe any one who were to tell me that the body which I perceived to be oval was in fact spherical. "Can't you believe your own eyes?" is generally supposed to be a conclusive argument, and is in reality such, whenever there is not very strong contradictory evidence.

2. The credibility of *testimony* is a vast and

complicated question, which has been often considered in its several bearings by a multitude of writers ; by Mr. Bentham amongst others, who has examined the question with much detail, in a judicial point of view, in the work edited by M. Dumont, under the title of *Traité des Preuves Judiciaires**, and in another work of five volumes, now in the press. Considering the subject at present in a logical, and therefore more general, point of view, the credibility of testimony may be said to depend upon the following circumstances :—

1st. Upon the *moral disposition* of the witness or witnesses. These moral dispositions, may be comprised under two heads, *veracity* and *attention*. The veracity of the witness depends upon the *motivés* which he may have on the particular occasion in question, for giving true or false testimony ; and upon his general *habits* of sincerity or insincerity. Under the head of attention, may be classed in like manner that *degré* of attention with which he may be supposed to

* This work has been translated into English, under the title of “ A Treatise on Judicial Evidence.” What I here denominate *testimony* corresponds to Mr. Bentham’s *personal evidence*, my *personal observation* relates to his *real evidence*, my *previous induction* forms part of his *circumstantial evidence*.

have applied to the observation of the particular fact in question, and the general *habit* of accurate or careless observation which he may have contracted.

2dly. Upon the *intellect* of the witness. Upon the perfection or imperfection (or the sanity or insanity, taking these words in their most extended sense) of the several simple mental faculties which are called into action by the observative faculty. It has already been stated, that these simple faculties are chiefly those of perception, conception, attention, memory, judgment, and perhaps comparison and abstraction. Any one of these faculties may be, and is frequently found to be, impaired either by *want of intensity* or by *erroneous operation*, whilst the others may be perfectly sound and possessed of great intensity. Want of intensity may be exemplified in the case of the states of mind generally termed *stupidity, carelessness of mind or inattention, forgetfulness, &c.* By *erroneousness of operation* of a faculty, I mean that which has place, when, by disease or otherwise, the operation produces a different result from what it would have done in the natural and healthy state of the faculty; as when, by a defect in the sight, things

appear smaller, or of a different colour, from what they are in reality. Under this head may also be classed *misrecollections* and the substitution, by the retentive faculty, of the produce of the imagination, for the results of perception or conception; as, for ex. when we believe that a thing has really happened which we have only imagined in our dreams. Erroneousness of operation of the mental faculties has been frequently termed *insanity of mind*, and should also comprehend what is occasionally called *unreasonableness*, taking this word in the sense in which it signifies the not being convinced by absolute proof.

3dly. Upon the *transmission* of the testimony. Under this head must be considered—1st, the *number* of persons through whom the testimony has been transmitted since it was founded on personal observation; to each of which transmitters the consideration of the several sources of credibility must be applied: 2d, the *mode* of transmission in each particular case,—whether or not such as likely or not likely to have given place to *misexpression* on the part of the transmittor, or to *misconception* on the part of the receiver of the testimony. The several modes of misexpression

and species of misconception will be adverted to in the next chapter, on Fallacies.

3. When a fact is inferred from *previous induction*, its degree of probability is necessarily founded on the combination of the various considerations I am now detailing.

II. Generalization of the *data*. Generalization has been defined, in a former chapter, "the imagining a *class* or indefinite number of individuals endowed with certain properties *abstracted* from all the others possessed by the particular individuals observed." Such is the definition of the term, when taken in its general logical sense; upon the present occasion, this sense will be found to be somewhat modified. The particular species of generalization which is subservient to induction may be characterized as follows: "the supposing that certain facts are likely to occur in a certain class of cases." In logical generalization, the property generalized is *essential* to the class formed; that is, it is the one which constitutes that class. In inductive generalization, it is an *accidental* property to which a greater or less degree of *universality* is ascribed, with reference to the individuals belonging to a class already formed.

This distinction may be illustrated by the example of a magnet, extracted from Dr. Whately's Elements.

A number of individual substances were observed to attract iron; by *logical generalization* a class was formed, of which this circumstance was made the characteristic property or connecting tie, and to which class was given the common name *magnet**.

Subsequently to this, a number of these individual magnets were observed to possess also that property which is denominated polarity; and, by *inductive generalization*, universality was ascribed to that property, and it was supposed that all magnets are endowed with polarity.

This example leads me to advert to a slight incorrectness which may be observed in the Elements, where logical generalization appears to have been confounded, not only with inductive generalization, but with the whole operation of induction. "In Natural Philosophy," it is said, p. 210, "a single instance is often accounted a sufficient induction; *e. g.* having once ascertained that an individual magnet will attract

* See Elements, p. 64.

iron, we are authorized to conclude that this property is universal.” But, in this example, the operation is logical generalization, not induction. Having observed that an individual substance attracts iron, we form a class of which “the attracting iron” is the characteristic property (see *Elements*, p. 65); and, when we give to this class the name of *magnet*, we merely substitute a single-worded denomination to the compound appellation “substances attracting iron.” Therefore, in the example above quoted, the concluding that “this property is universal” is merely the concluding that magnets are magnets.

The validity of inductive generalization, or the degree of universality to be ascribed to a certain fact with reference to a certain class of cases, appears to depend—1st, on the constancy of the fact in the cases observed; that is, on the number of individual cases in which this fact has been observed to exist or not to exist: 2d, on the nature of the connection between the fact and the cases in question; that is, on the nature of the relation between the property of which the universality is supposed, and that which constitutes the class to which this property is applied.

1. The constancy of occurrence of the same

facts in analogous circumstances has been attributed to what is termed the “stability of the laws of nature ;” upon which occasion it may be well to quote Dr. Whately’s words :

“ ‘ The stability of the laws of Nature,’ which is our constant assumption in inquiries relating to Natural Philosophy, assumes many different shapes, and in some of them does not appear to possess the same absolute certainty as in others : *e. g.* when, from having always observed a certain sheep ruminating, we infer, that this individual sheep will continue to ruminate, we assume that ‘ the property which has hitherto belonged to this sheep will remain unchanged ;’ when we infer the same property of all sheep, we assume that ‘ the property which belongs to this individual belongs to the whole species :’ if, on comparing sheep with some other kinds of horned animals, and finding that all agree in ruminating, we infer that ‘ all horned animals ruminate,’ we assume that ‘ the whole of a genus or class are likely to agree in any point wherein many species of that genus agree ;’ or in other words ‘ that if one of two properties, &c. has *often* been found accompanied by another, and never without it, the former will be *universally* accompanied by

the latter :’ now all these are merely different forms of the maxim that ‘ nature is uniform in her operations,’ which, it is evident, varies in expression in almost every different case where it is applied, and admits of every degree of evidence, from absolute moral certainty, to mere conjecture.” pp. 242, 243.

I have made this long extract for the purpose of exemplifying the different degrees of constancy of a fact in a class of cases. At the same time the above passage has suggested some observations* which may not be found out of place.

Dr. Whately having constantly in view the reducing inductive arguments to syllogisms, considers inductive generalization as the assumption of a major premiss ; which major premiss, in Natural Philosophy, he says, is always some form of the maxim : “ Nature is uniform in her operations.” Thus, in the three inductive operations contained in the above passage, the following major premises are respectively assumed : “ A sheep which has ruminated will ruminate *as long as it lives* ;” — “ *all* sheep ruminate ;” — and “ *all* horned animals ruminate.”

Now all these general propositions can only

be assumed when the supposed universality is attended with that degree of probability, which is, for every practical purpose, *equivalent* to absolute certainty, and which is usually termed *moral* certainty. But this certainty is never in itself *absolute*, an expression which should, logically, be reserved to the result of the mathematical or syllogistic proof; or at farthest to that greatest degree of probability which, as has been said, is produced by personal observation. And how many are the cases when the "operations of nature" cannot be reduced to any rule of uniformity! How many are the *aberrations*, daily observed, from those general rules, which have been regarded as the most constant! Thus it is that more or less of *doubt* is thrown upon all inductive conclusions; and it is this want of uniformity that is so much in the way of regular classifications of physical entities.

These variations in the stability of the laws of nature are observable with relation to ethical sciences as well as in Natural Philosophy. In the general propositions that "men who have long associated with those who consider robbery as a meritorious act, will themselves acquire a disregard for the right of property," that "white

men are more generally intelligent than negroes," that "gravity is general in Englishmen, levity in Frenchmen," &c.; there is the same gradation in the universality of these several facts, as that which is observable in physical cases.

The degree of constancy of a fact is ascertained by the number of cases where this fact has place, as compared with the number of cases of the same class where it has not place. If the occurrence or non-occurrence of facts could be ascertained at all times with absolute certainty, inductive generalization, founded on the degree of constancy, would be reduced to a mere mathematical calculation of chances. But as it has been shown that this is not the case, in the calculation of the degree of constancy, we must also take into consideration the *relative degree of probability* of the facts which militate in favour or against the universal proposition in question, and their *relative proportion* as to *number*, that is, the number of the facts recorded on each side of the question, as compared with the total supposed number of cases of the same class.

Thus, in the inductions brought forward by Phrenologists, all the cases which they observe to be in favour of their system, are carefully ex-

hibited and recorded, whilst their opponents, less interested in the controversy, allow innumerable instances, which they might have adduced in refutation, to be neglected and forgotten. If a society of Anti-phrenologists had been instituted at the same time as that of the partisans of that system, and if they had pursued their object with the same zeal, perseverance, and talent, they might probably have discovered, that, if, in the cases actually recorded, so great a number appear to give some colour to their adversaries' doctrine, those cases which have been neglected are equally conclusive on the other side of the question. But there are always but few who devote their life to the refuting an erroneous system, as compared with those whose sole object is the support of one which is so flattering to the mind by its apparent ingenuity and importance. In no case does any one examine skulls with so much perseverance as a professed phrenologist, who, like all those who apply their whole faculties to any particular branch of study, is generally ardent in support of this his favourite pursuit. Is it then to be wondered, that he should endeavour to conceal, even from himself, those cases where he had been led to pronounce an erroneous judgment; and

that he should carefully treasure up and publish those where he had applied his theory with success ?

2. The second consideration upon which the validity of inductive generalization appears to depend, has been stated to be the nature of the connection between the fact generalized, and the cases in which it is supposed to have place. For the purpose of induction, these connections may be generally divided into coexistence* and dependence. Two facts may be said to be merely *coexisting*, when we suppose that the non-existence of the one would neither influence nor modify in any way the existence of the other ; and to be *dependent* on one another, when we suppose that the existence of the one would not have place in the same manner, if the other did

* Coexistence in this case is with reference to *place*, not to time, or, at any rate, not constantly and absolutely so. Thus, coexistence should in this case include those relations upon which is founded the proverb, " misfortunes never come alone," applicable to the case where several misfortunes occur *successively*, though with no intervals of any length. So in the case of the general assertion, that " nations generally rise gradually till they reach a maximum of prosperity, and then commence to decline till their ultimate fall."

not exist. The importance of this distinction will appear from the great difference of the validity of inductive generalization in the two cases.

In the example above given, "all horned animals ruminate," the relation between the two properties is merely that of coexistence, without any probability of dependence, either of rumination upon horns, or of the existence of horns upon the power of ruminating. But as this coexistence has been observed in all cases, and as the contrary has not been observed, nor even suspected, we are fully authorised to come to the above conclusion. And yet there is so little certainty in it, that, were we to hear of the existence of an animal that had one of the above properties without the other, however small the degree of credibility we attached to the information, we should not, on account of the general proposition we had formed, deduct from the value of that evidence, but rather modify our generalization in consequence of such information.

With regard to ethical science, amongst the examples above given, inductive generalization is founded on mere coexistence; in the instance of the assertion, "gravity is general in English-

men, levity in Frenchmen, &c. ; for no perceptible dependence has been observed between those general moral dispositions and the being born in one or the other country. Such coexistence is, for the purpose of induction, reckoned of still less value than that which relates to physical science ; and this is so much the case, that, whenever a general coexistence of two ethical properties has been perceived, it is always supposed that there must exist some dependence, although hitherto unobserved, of one property upon the other. Thus, if levity has been observed to be a distinguishing feature in a Frenchman's character, it has been attributed to the climate, to the common mode of education, &c. of that country.

Coexistence of facts or phenomena is the only ground upon which the theories of unlucky days, of many astrological predictions (as in German almanacks), &c. &c. are founded. The arguments adduced in support of these theories are at best mere calculations of chances, and in general these calculations are far from being fair, as every evidence of any moderate degree of probability is brought forward if it tend to favour the theory ; and, on the other hand, no evidence

of an opposite tendency is admitted, but that which produces all but certainty, and which cannot be in any manner set aside.

Relations of dependence are of far greater importance, and in a number of cases give a degree of probability to the induction which may amount to moral certainty, though, in many others, a variety of circumstances may cast over it a considerable degree of doubt.

These relations of dependence are those of *cause* and *effect*. An inductive generalization, founded upon these relations, may be reduced to one of the following general forms :

1. Similar * causes produce similar effects.
2. Similar effects are produced by similar causes.

But these two propositions are very different in the constancy of their application. The first has been so universally observed, that it produces in most minds absolute certainty, and an induc-

* By the word *similar* is here meant similar in every respect, except as to the *individual* case to which it is applied. The idea is generally conveyed by the word *same* ; but, in strict logical language, the latter word appears to indicate the same *individual* cause, not the same *species* of causes.

tion founded upon it seldom fails to convey proof (supposing the operation to be valid in other respects). Upon this is founded every act of our life. If we eat, it is because we have experienced that food satisfies hunger, and infer that food will again produce the same effect. If we punish a man, with a view to prevent his committing a second time a crime that he has been guilty of, it is because we have observed, or heard, that a similar effect has been produced by punishment in other instances.

The investigation of the cause of an effect is by no means so certain in its results. The same effect is often observed to be produced, sometimes by one cause, sometimes by another ; and in those cases the chance is generally equal, as to which is the efficient cause in the instance in question, provided, however, that there is no ground for inference of the cause other than the knowledge of the effect. And yet how often do we not form inductions, in which we are obliged to content ourselves with these uncertain grounds of inference.

In physical science we are continually referring to this second of the two above-mentioned general rules. Amongst the subject-

matters of this science, many effects come under our observation without their cause being in any way perceptible. In these cases, the method by which we *explain* those facts or phenomena (that is, assign *causes* or *reasons* for them) is, by an induction founded upon the analogy between those facts and similar ones of which the causes are known to us, to which analogy we apply the above proposition, that "similar effects are produced by similar causes." It is in this way only that we explain the nature of heat and light, &c.

The degree of reliance that may be placed upon this species of induction may be illustrated by the following example. Suppose a mechanist had never heard of any such thing as a spring, that the rotatory motion of clocks and similar instruments had never been observed by him to have been produced otherwise than by weights ; if a clock set in motion by a spring be so presented to his view that he cannot see the clock-work (supposing him to know that the *primum mobile* is not *directly* applied to it, but only for the purpose of *winding it up*), would he ever imagine that the motion was *immediately* produced otherwise than by a weight ?

Thus, heat and light are supposed by some

to be *substances*, by others to be *vibrations*, and it is said that the effects produced *can* only be accounted for in one of these two ways ; what is meant is merely that such are the only causes which, in analogous cases, have been observed to produce analogous effects. Such is the tendency of the observations and experiments on which are founded the inductions adduced, by the partisans of each of these theories, in support of their own cause ; and, as a further proof of his own system, each one endeavours to shew the impossibility of the other ; but why may we not be in this respect in a similar case to that of the above-mentioned mechanist ? why may there not be some *other* cause, totally unknown to us, which produces light and heat ? Nothing shews that there *is* such a one, nor does it appear probable that there should be ; but nothing shews positively that there *is not*—nothing but a general unwillingness on our part to admit that there be one which we can neither know nor guess at,—a feeling of shame at the thought of the number of instances where the causes of the physical phenomena we observe are entirely hidden from us.

In the case of generalization founded on re-

lations of dependence, there is another difficult and important consideration to be taken into account, which is, whether such relations have or have not place, and what degree of influence each particular cause may have on the effect produced.

In ethical science, it is often very doubtful whether a general proposition be founded on mere observed coexistence of facts, or upon the relations of cause and effect. Thus when, from having observed that A told the truth on all the many occasions when we have been enabled to verify his assertions, we conclude that A always tells the truth; this conclusion may be in some measure founded on mere observation of the hitherto coexisting facts of A's speaking, and of his telling the truth, which, by a calculation of chances, produces a probability of his telling truth on all occasions. But we may also suppose a slight dependence of the *fact* of A's telling truth, upon a *cause* (viz. a habit acquired of telling truth) resulting from the data.

In the above example, the degree of influence of the cause, or supposed cause, is but small—very small if compared to that which is

exemplified by the proposition "A hungry man will eat the food which is placed before him, when there is no more powerful motive tending to restrain him from doing so."

With reference to the degree of reciprocal influence of cause and effect, these relations may be generally divided into *immediate* and *remote*, into *direct* and *incidental*.

Thus, the *immediate* effect of attraction of gravitation is to make all bodies approach the centre of the earth, as long as no obstacle prevents their so doing; yet a body may be so placed (as for example, on one end of a lever) as that attraction of gravitation may cause it to *rise*; that is, to remove farther from the centre of the earth. In this case, the attraction of gravitation is the more *remote* cause of the effect produced.

The *direct* effect of a shower of rain is to make the ground wet, an *incidental* effect is to promote vegetation, which produces a very different degree of universality in the two general propositions, "All showers of rain wet the ground on which they fall," and "All showers of rain promote vegetation."

From the above several examples, some idea may, it is hoped, be formed of the various cir-

cumstances which influence the validity of the universality of an inductively general proposition. I shall now proceed to examine into the last of the three considerations, upon the combination of which I have said that the validity of an inductive operation depends.

III. Application of the general rule to the case in question. Having ascertained the degree of probability of the data, and thence of the general proposition founded upon these data, there remains to be examined how far such general proposition is applicable to the case to which the induction refers; whether there may not be other modificative or contradictory general propositions applicable to the same case; and, if there may, to which of these general rules the preference is to be given in regard to credibility or to connection with the case in question.

In many instances, a general proposition appears at first to be applicable to a particular case, when, in fact, there may be a number of circumstances attending upon this case, which may take away its analogy with those upon which the generalization was founded. For ex. "A tells the truth upon this occasion, *because* he has always been found to speak truth." But he may

be at present in some degree insane, or he may himself entertain an erroneous idea on the subject in question, &c., which is supposed not to have been the case upon the occasions on which was founded the general rule of his veracity, and thus the analogy is entirely destroyed.

With regard to the comparison of the several conflicting general propositions, more or less applicable to the case in question, it may be exemplified in the following arguments :

Suppose that A asserts a fact and B denies it, that A has always been found to speak the truth, and that B has been frequently detected in falsehoods. If these be the only data which can be obtained, the probability of the truth of the fact in question will, by most persons, be reckoned as considerable. But if it be added that A has on this occasion a strong motive for concealing the truth, and B an equally strong one for declaring it, and if it be ascertained from other data, not only that men will in general depart from their usual habits when actuated by a strong motive, but also that they will naturally speak the truth when uninfluenced by any particular motive either one way or another, these propositions, in contradiction to the former ones, will

induce a much greater belief in the falsity of the fact asserted by A and denied by B, than was formerly entertained of its truth. And this because, on a comparison of the reasons for its truth with those against it, it will be seen, that the former were founded upon mere observed co-existence of facts ; whilst the latter, resulting from a supposed dependence of cause and effect, are therefore attended with a much greater degree of credibility.

It is owing sometimes to the inability, sometimes to the unwillingness, of the human mind to take into consideration, and to weigh the comparative value of the several *reasons* or general propositions which militate in favour or against a particular theory, that so many effects are practically produced so different from those which were intended or expected. It is to the same cause that must be ascribed the origin of the fallacious proposition, that a thing may be good in theory and bad in practice ; for, in such a case, the theory is incomplete from not having taken into consideration the *obstacles* to its application ; that is, the contradictory general propositions. If the famous steam-engine which, two years ago, was, in the belief of many eminent engineers, as

well as in that of its inventor, to have produced such extraordinary effect as to supersede all existing steam-engines, has, on the contrary, been found capable of producing no effect at all, or next to none, it is because, in the theory on which it was founded, the waste of heat and other obstacles were not taken into account. If certain philosophers have imagined that they have discovered a mode of establishing amongst men absolute equality and commonalty of rights and goods, attended with absolute and lasting harmony, if their reasonings have appeared to be convincing to their followers, it is because they have contrived to overlook such general (and by no means improbable) propositions as that "men are not and cannot be made, either perfectly free from prejudices and passions, or perfectly equal in natural capacity," or many other such objections which might be opposed to them.

Such is the analysis of the process of induction according to the view which I should be disposed to take of the subject, and which induces me to differ in opinion from the author of the *Elements*, and to consider that there is a process of reasoning different from syllogism, which process I call *induction*. And having thus ex-

plained the nature of the operation of the ratiocinative faculties, there remains only to exhibit what are the occasions upon which the operation of these faculties is likely to produce an erroneous effect ; a subject which will form the matter of the ensuing chapter on Fallacies ; but, before I conclude the present one, I must pass a hasty glance over the remainder of Dr. Whately's Dissertation on the Province of Reasoning ; the greater part of which will be found to bear some relation to the present subject.

Next to the chapter on Induction, is a long one "on the Discovery of Truth," in which we have a great variety of matter ; much which had already been said in former chapters ; some which is now first brought to view, and may require some comment.

First comes the demonstration of this proposition : "It is not by a process of Reasoning that new truths are brought to light," which is deduced from the following premises :

"All reasoning may be resolved into syllogisms," and

"A syllogism proves nothing but what is virtually asserted in the premises."

In order to facilitate the comprehension of

this demonstration, he premises three things; that is, he requires that three things be granted, on which he founds his demonstration.

The first of these three premises or postulates, is an explanation of the proposition to be proved. When he says that "It is not by a process of reasoning that new truths are brought to light," he does not mean to say that "any kind of truth can be elicited *without* reasoning," but that "no new truth can be elicited by reasoning *alone*." It is very fortunate that he has given us this explanation; for I confess that the omission of the word *alone*, in the first enunciation of the proposition, was leading me far astray as to his meaning.

By the second postulate, the word *reasoning* is again restricted to syllogistic argument, to the exclusion of induction; thus shewing that, in the conclusion, the word *reasoning* is taken in the same sense as that which it has in the first (or major) premiss.

The argument now stands thus :

Syllogisms prove nothing but what is virtually asserted in their respective premises ;

Reasoning consists entirely in syllogisms ;

therefore,

Reasoning proves nothing but what is virtually asserted in the premises it contains ;

from which he passes to the conclusion, that “ by Reasoning no new truth can be elicited,” in virtue of the third postulate, viz. that a *new truth* is that which is not “ virtually implied and involved in any thing already known.”

With the help of all these explanations, we learn that we are to understand his argument as follows :

No new truth can be elicited by syllogisms alone ;

Reasoning consists entirely in syllogisms ;

therefore,

No new truth can be elicited by reasoning alone.

Unfortunately for myself, not only can I not see any *use* in this argument, supposing it to be correct, but I cannot even admit *either* of the premises. I have often enough said why I do not consider reasoning as consisting *entirely* in syllogisms ; I shall now shew why I believe that new truths *can be*, and actually *are*, elicited by syllogistic reasoning.

Suppose I do not know, or that nobody knows, that “ all equilateral triangles are equiangular ;” and suppose I discover this by a process of mathematical (a species of syllogistic)

reasoning, and by that *alone*, (which was probably the case with the mathematician who *did* discover it); is not this discovery of mine the discovery of a *truth*? and is not that truth *new* to all mankind?—as new as the first discovery of any unknown real object? Both truths *existed* before, as is implied by the word *discovery*, but neither were *known*. I do not deny, that if *new* be defined “that which is not known, *nor can be deduced from any thing which is known*,” the author may be right; but I cannot see any reason for distorting, in so great a degree, the meaning of a word, when that meaning has been established on so firm a basis, by long and universal use; a use adopted by Dr. Whately himself, upon all other occasions but the present one*.

With regard to the several bearings of a proposition, and to the ten *categories* (pp. 217, 218), I must refer to what I have already said of *properties*, in Ch. V; of description, in Ch. VI; and

* See p. 239, “*new*, that is, *unperceived* and *unthought of*.” The fallacy exhibited on the occasion of the above argument of Dr. Whately’s appears to arise from something more than mere obscurity of expression, and to be referrible to the head of “Fallacies of erroneous expression.”

to the classification of Entities, at the end of Ch. III.

In the next pages of the Elements (218 et seq.) the author appears to repent of having limited the application of the word *new* to "that which cannot be deduced from what is already known," and considers it, perhaps with more propriety, as a *relative* term, applicable to whatever is not yet known ;—*relative*, both as to *person*—for a thing which is *new* to one man may be *old* to another—and as to *time*—for a new thing, when once exhibited, becomes an old one, with regard to the person to whom it is exhibited.

The discovery of a new truth, therefore, now stands defined, "the elicitation of any thing which is not yet known ;" and, as this discovery may be made, either with or without the immediate aid of observation and testimony, two species or modes are here mentioned, which are certainly perfectly distinct, and which Dr. Whately calls *information* and *instruction* ;—I should rather say, *elicitation by observation*, and *elicitation by ratiocination* ; including, under observation in general, both personal observation and testimony ; and under ratiocination, both induction and deduction. The sense of these

several words has been so frequently detailed, that I do not think it necessary to enlarge any more upon this part of Dr. Whately's *Elements*, which appears to be generally rather confused in its style, and by no means rendered clearer by the above-mentioned alterations in the meaning of the words *new truth*, in the course of so few pages.

In the second section of the same chapter (p. 226), discoveries are divided into *physical* and *logical*. This division corresponds, in a certain degree, to the preceding one, into information and instruction: the difference is, that induction is now coupled with observation in the characteristic operations of *physical* discovery, and deduction alone constitutes *logical* discovery. I do not perfectly comprehend the use of this double division; nor can I form to myself any clear idea of the particular object the author had in view in writing this section: I must, therefore, request him to excuse any of my remarks which may be found to be incorrect, in consequence of having mistaken that object.

"In all cases," it is said, p. 227, "of the establishment of a *general* fact from Induction, that *general* fact is *ultimately* established by

Reasoning; e.g. Bakewell, ... observed &c. . . . these facts were his data from which *combining* them with the general principle that Nature is steady and uniform in her proceedings, he *logically* drew the conclusion that &c. . . . but then his chief merit was in making the observations, in so *combining* them as to abstract &c. . . also in conjecturing &c. . . The making of such observations and still more the *combination*, abstraction and judgment employed are what men commonly mean when they speak of Induction, and these operations are certainly *distinct* from Reasoning."

Reasoning is the drawing a logical conclusion, ... Bakewell drew a logical conclusion by combining observations, ... This combination of observations is distinct from Reasoning. I really am greatly at a loss where to class this mode of reasoning, and am only the more inclined to apply that same word *reasoning* to induction as well as to deduction. I should very much doubt that Bakewell ever thought of the "uniformity of the proceedings of Nature;" he probably had only found that facts were of such and such a nature wherever he had attended to them, and that he had never heard of any instance

where they were not so ; accordingly, by inductive generalization, he supposed these facts to have place in all similar instances. I see *reasoning* in this operation, but no *syllogism*.

One word more as to *matter of fact*. Dr. Whately applies the term to such facts only which rest upon the authority of observation or induction, not to those which are mathematically or syllogistically proved. Is this in conformity to the ordinary senses of the locution ? When it has been proved that “ all equilateral triangles are equiangular,” is not this coincidence a *matter of fact* ?

Section 3 (p. 231) relates to Definitions. Having already spoken of the identity of the *meaning of the term* and the *nature of the thing*, I have now to advert only to the distinction made between a *mathematical* and a *logical* definition ; for there appears to me to be none. A mathematical definition of a square is strictly analogous to a logical definition of an animal, a man, or any other common term,—an enumeration of the essential properties of the collective entity so designated, abstracted from all accidental properties which any individual square body, animal, man, &c. may possess. If the definition of

a square may be given in the form of the postulate, "let a foursided figure, of equal sides and rightangles, be called a square" (Elements, p. 233), so may any other logical definition ; as, for instance, that of a *man* ("man is a rational animal") may be thus expressed : "let a rational animal be called a man." *Square* (as above defined) is the name of a collective entity formed of the properties which constitute the superordinate genus *surface*, with the addition of that of "being bounded by four sides equal in length, and placed at right angles to one another," and is applicable to every individual object endowed with those properties, whatever others such object may have. *Man*, in like manner, is the name of a collective entity formed of the properties which constitute the superordinate genus *animal*, with the addition of that of *rationality*, and is applicable to every individual object endowed with those properties, whatever others such object may have.

In the fourth section of this same chapter (p. 234), after two or three more pages on the restriction of the word reasoning to syllogistic argument, are a few lines upon *observation* and *experiment*. A definition of the latter term might

not have been useless on this occasion, but has been neglected by the author. By *experiment* is commonly understood any physical operation which is performed with a view to assist observation ; as, for ex. placing two substances in contact, with a view to observe their reciprocal chemical action, or the hanging a weight to a bar of iron, with a view to observe the quantity that it can support without breaking, &c. *Experience* is passive ; *observation* is active, but purely mental ; *experiment* is a *physical* operation.

Chapter III, on Inference and Proof, Elements, p. 245. Upon this occasion I should again differ, in some measure, from the author, in my idea of the sense commonly attached to the words he defines. "Proving," he says, "is the assigning of a reason or argument for the support of a given proposition, and *inferring* the deduction of a conclusion from given premises." They "are not two different things, but the same thing regarded in two different points of view . . . he who infers, proves ; and he who proves, infers." Now suppose A asserts that heat is a substance, B objects that it cannot be *proved* to be so. "True," says A, "we cannot *prove* it, but we may *infer* it from such and such well-attested observations." Is

this an incorrect mode of speaking ? and, if not, is not *inference* best applicable to induction which produces mere probability ; *proof* to deduction or to such inductive operations only, which, by the moral certainty of the conclusion, are regarded as equivalent to deduction ?

True it is that “ the word *infer* fixes the mind first on the premiss, and then on the conclusion ; the word *prove*, on the contrary, leads the mind from the conclusion to the premiss ;” but this appears to be an incidental circumstance which has arisen from the nature of the two arguments, not a characteristic difference, or, at any rate, not the sole essential distinction between the two operations. In deduction, the conclusion is equally certain with the premises, and is usually stated first, as being considered the most important. In induction, the premises are *first* held to view, as being more certain than the conclusion. But in neither case is this necessarily so ; and the questions, *How do you...?* and *What do you...?* might without impropriety be respectively completed by the words *prove* or *infer*. It may not be very good English to say, “ What do you prove *from* that ?” but I do not think that the most rigid grammarian would

object to the expressions, "What do you prove *by means of that?*" "How do you infer this from that?"

It might be objected to me, that the word *proof* is also frequently applied to inductive argument; but this is only the case when it is intended to show that the value of the inference amounts to moral certainty, and then induction is considered as equivalent to, and spoken of as being the same as, deduction. And I should not think that the word *infer* could ever be aptly applied to mathematical demonstration.

It appears to me also, that the words *inference* and *proof* cannot strictly be *opposed* to each other. If the *proof* and the *conclusion* are the two portions of a deductive argument, the *reason* and the *inference* may be considered as the corresponding portion of arguments in general, or of the inductive species in particular.

The next section of this third chapter is headed, "Investigator and Advocate," and the distinction between the two is founded upon that which had been established between inferring and proving; but it appears to me that both these operations may be necessary both to the investigator and the advocate. An *investigator*, I

should say, is he who combines experiment, observation, and ratiocination, with a view to clearing up any doubt he may entertain upon any subject, or to the adding to the stock of information which he may possess with regard to it. An *advocate* is he who endeavours to prove to another person a proposition (true or false) of which he himself has no doubt, or affects to have no doubt. An advocate may be an investigator; the investigator ceases to be such when he puts on the advocate.

The word investigator, however, is only given in the marginal title of the section in question. In the text the word *philosopher* is substituted; a word which cannot fail to throw more or less of obscurity over every topic in which it is suffered to intrude. The term *philosophy* has ever been strangely ill used from its first coining by the ancient Greeks to the present day: scarcely may there be found two authors who agree upon its meaning. It has sometimes been extended to the designation of the pursuit of science in the aggregate, and often restricted to that of particular branches; it has been exclusively applied to various ethical, noological, or physical studies; and here the

philosopher's field is confined to the " combining and selecting *known* facts . . . for giving . . . conclusions . . . implied in the premises ;" to the " making logical discoveries ;" or, in a word, to mere syllogistic reasoning.

In the next page, however, our *philosopher's* duties are again enlarged : the whole field of observation and experiment is now allotted to him for exercise ; he is restricted only as to the mode in which he is to make use of his ratiocinative faculties ; he is to draw conclusions from his observations ; but he must not seek for arguments in support of any fact ; for this is the advocate's or rhetorician's province. Are these two functions as distinct as Dr. Whately conceives them to be ? and might we not, from the data before us, draw up the following syllogism ?

The philosopher infers, the advocate proves (p. 247) ;

He who infers, proves, and he who proves, infers (p. 246) ;
therefore,

The philosopher is an advocate ; that is, the two words are synonymous.

Rhetorician, a term incidentally introduced upon this occasion as a sort of synonym to *advocate*, appears to call for a few words in explanation of its import. A rhetorician, according to

my view of the matter, is the advocate who seeks to convince, not by logical argument, but by influencing the affections and passions. The ideas he seeks to convey are more generally false than true ; his arguments more frequently fallacious than logical. Rhetoric is an art of which the practice is useful, when a truth is to be impressed upon intellects too narrow for the ready conception of logical arguments,—when the diffusion of a false idea may happen to be necessary for any purpose of general utility,—or for the purpose of giving amusement, when the subject is of so little importance that its truth or falsity matters not. Beyond this, rhetoric is ever a baneful art, and the grand object of the logician is to guard against its influence, and to counteract its evil effects.

The remaining chapter of this Dissertation on the Province of Reasoning relates to verbal and real questions. Its chief object appears to be to shew the importance of definition (or rather exposition in general), without which it is shewn that no logical argument can be carried on. This importance of exposition might have been still more generalized, and might perhaps be exemplified, were it worth the labour, in more

than one instance, where a certain degree of obscurity prevails over this very chapter of the Elements, over the whole of the Appendix, and the greater number of the professed definitions in the Index. But it would probably exhaust the reader's patience, and that to little purpose, were I to pursue this investigation any further. I shall therefore proceed immediately to the theory of fallacies.



CHAPTER XI.**ON FALLACIES.**

(Whately's Elements, Ch. III. p. 131.)

DR. WHATELY'S chapter on Fallacies is introduced by the following exposition of the subject :

“ By a fallacy is commonly understood any unsound mode of arguing, which appears to demand our conviction, and to be decisive of the question in hand when in fairness it is not.”

This definition may be fully applicable to all apparent arguments, in which an erroneous conclusion is deduced from the premises by a mere play upon words ; as, for ex. “ No cat has two tails, one cat has a tail more than no cat, therefore, one cat has three tails ;” and of which the very absurdity of the conclusion is enough

to shew the error. But is the above definition equally applicable to that most dangerous of all classes of fallacies, to that which most of all needs detection and exposure ; namely, to that which, without producing any direct *conviction*, tends to throw confusion in the way of conception, and to give to a false and pernicious argument a degree of probability far more difficult to destroy than any fact which, though apparently proved, is, *primâ facie*, absurd ?

A much more general and comprehensive exposition is given by the editor of Mr. Bentham's Book of Fallacies ; which exposition I shall here transcribe, in order that the reader may judge whether his or Dr. Whately's is the most applicable to the term *fallacy*, in its most ordinary and most useful sense.

“ By the name of *fallacy*, it is most common to designate any argument employed or topic suggested, for the purpose, or with the probability of producing the effect of deception,—of causing some erroneous opinion to be entertained by any person, to whose mind such argument may have been presented.” Book of Fallacies, p. 1.

Before I examine the *logical view* * which Dr. Whately here professes his intention of taking of the subject, I must attempt the classification and exposition of the principal fallacies, according to my own ideas. In this operation I shall be, in some measure, guided by the above-mentioned Book of Fallacies; but the method there adopted must, for the present purpose, be considerably modified. Only one part of the field, that of political fallacies, was there attended to, and that with a view to political and particularly to parliamentary argument. The object being different on the present occasion, the source of division will also be different. Fallacies must now be considered in a more general point of view: the whole field should be

* "We propose to take a Logical view of the subject, referring the different fallacies to the most convenient heads, and giving a scientific analysis of the procedure which takes place in each." Elements, p. 131. Either I am much mistaken, or, by a *logical view*, is here meant methodization, exposition, and analysis, without any, or, at any rate, without much ratiocination; and here at last Dr. Whately's view agrees with mine, as to the extent to which the field of Logic is to be carried, notwithstanding the restricted limits he has hitherto been repeatedly assigning to it.

embraced, and the division carried on as far as it is applicable to arguments in general, without reference to any particular subject. This is an undertaking for which I certainly do not feel that competency which would be desirable; but as, without it, a great blank would be left in the science of Logic, I shall endeavour to exhibit generally my views, leaving ulterior details for the more comprehensive work I am preparing.

Before I proceed to the division of the genus *fallacies*, I must observe that there may be a number of assertions of which the falsity is so very evident, that it is useless to exhibit them in the character of fallacies, there being no possibility of any persons being led astray by them; as, for ex. if we were to assert that a thing which *is, is not*. And one great error of Logicians appears to be, that, after defining a fallacy “an argument which appears to prove a question which is not fair or true,” they give as examples of fallacies, *arguments* (or rather *puns*) which can never, in this sense, *appear to be correct*; that is, can never convey to any mind any degree of belief of the false assertion adduced. Who will ever believe, for instance, that “a river has

feet because it runs," or that "a constellation barks because it is a dog *?"

Fallacies may in general be referred to one of the two following classes :

1. Fallacies arising from the manner in which the ideas are communicated, or *fallacies of expression*.

2. Fallacies arising from the nature of the ideas themselves, or *fallacious ideas*.

This first division of fallacies answers, in some measure, to the common one, into *fallaciæ in dictione* and *extra dictionem* ; but I have given a somewhat greater extent to the former class than that which is usually ascribed to it, as I include in it nearly the whole of Dr. Whately's *semilogical* fallacies, &c. as will presently be seen in my examination of his system.

Fallacies of expression have place when the learner fails to entertain a clear, correct, and complete idea of the arguments or propositions com-

* " Fallacia *Æquivocationis*.....1. *cum dictio multa principaliter significat* : ut, si probetur aliquod coeleste sidus esse animal, vel latrare, quia est canis. 2. *cum dictio unum propriè significans, per Analogiam, aut Metaphorum ad alia transfertur* : ut, si probetur aquam pedes habere, quia currit ; aut pratum os, quia ridet ;" &c. Saunderson's Logic, p. 155.

municated to him by the teacher. That defect in the operation of communication which is the cause of these fallacies, is termed *misexpression* when the fault is considered as lying on the part of the teacher, and *misconception* when on that of the learner*.

Defective expression may be generally referred to one of the three heads of *ambiguity*, *obscurity*, and *error* of expression.

I. Ambiguity of expression has place when a word may be understood by the learner in either of two or more different senses. Such ambiguity becomes a source of fallacy, when, amongst these several meanings, the learner is induced, by chance or from any other cause, to adopt a different one from that which the teacher had in view.

This definition of ambiguity will be found to be much more limited than that which is usually given by logicians. All *homonymous* terms, that is, all those which may happen, in the same or in different circumstances, to designate two or

* It should be remembered that by the word *teacher* is here to be understood he who makes the communication—who utters the proposition or argument; by the word *learner*, he to whom it is addressed.

more different objects, are by them included amongst *ambiguous* terms *; but I should make use of the latter denomination only in the cases where there is room for hesitation, on the learner's part, as to which sense he should adopt; and there are a great number of instances where it is impossible he should be mistaken as to the intended import of a homonymous term. Thus in the example already quoted from Saunderson, of a river *running*, though "running" has another sense than that of "flowing" in which it is here used, yet, to no one would the idea occur that it was that other sense which was here meant,—to no one would this *homonymous* word appear in the smallest degree *ambiguous*.

Ambiguity may be seated in words alone or in sentences. When it is in the words alone, the fallacies arising from this source may be termed fallacies of *equivocation*; when it is the sentence that is ambiguous, the corresponding fallacies are those of *amphibology*.

1. As examples of ambiguous *terms* producing fallacious conception, we may refer to the

* "Fallacia *Æquivocationis* sive *Homonymia* est, quando vox aliqua simplex aliter atque aliter accipitur in argumentatione." Saunderson's *Logic*, p. 155.

observations I have made in preceding chapters, with regard to the double meanings of the words "distributed," "necessary," "particular," "discourse," "new truth," &c. as used by Dr. Whately and other logicians. In my above-mentioned "*Essai sur la Nomenclature et la Classification*," &c., I pointed out the ambiguity of the words "physic" "physics," &c. in several of their various conjugates in French and English—applied as they are, sometimes to medicinal science, sometimes to Somatology in general, sometimes to technological science: in the same work may be seen several other instances of ambiguous and obscure general denominations of arts and sciences.

Another cause of ambiguity in terms is derived from the diversity of import which custom has often ascribed to *paronymous** words. A conjugate is naturally supposed to correspond in import to its root; and when this is not the case, it will always take some time for the learner to dismiss the original meaning from his mind.

Ambiguity in conjunctions and other words by which terms and propositions are connected, is strikingly exemplified in the instance of the

* See hereafter fallacies of paronymity.

word *or*. In almost all European languages this conjunction may express either *synonymity* or *alternation*, and often in a manner in which the learner is much puzzled as to which of the two is to be understood. The word *either* becomes in some degree ambiguous, from its occasional modern use as a synonym to *both* or to *each*. The ambiguity of some causal conjunctions has been exemplified by Dr. Whately. (See above, p. 24, and Elements, p. 25). The present tense of the verb is in many cases ambiguous, as it is sometimes used *indefinitely*, that is, to denote the action without any regard to time, as *animals live and eat*; sometimes it is definitely applied to the present time, as, *He is in London*.

2. Ambiguity in sentences, or *Amphibology*, may arise from *miscollocation*, or from the double meanings of grammatical inflections*.

Ambiguity from miscollocation has place when, by a defect in the order in which the

* *Inflections* are the modifications in words by which are expressed certain grammatical relations, (such as time, mood, number, gender, case, &c.) ; as, for ex. "*rego, rexi*," "*write, wrote*," &c. Languages are said to be more or less *inflected* according to the proportion of such relations expressed by modifications in the words themselves, as compared to those which are expressed by separate auxiliary words.

component parts of a portion of discourse are exhibited, it remains uncertain to which of two terms or propositions a *clause*, a *parenthesis*, or a relative pronoun, or other term, should be referred. Various examples of this species of amphibology may be seen in Dr. Whately's Elements, p. 165, note.

Grammatical amphibology will, of course, be found much more common in the more inflected languages than in the English. The following example, however, is given by Dr. Whately: "The duke yet lives that Henry shall depose." This, as well as other species of ambiguity, was much practised by ancient priests, to save the credit of their oracles; as in the instance of the celebrated oracle given to Pyrrhus at Delphi; "Aio te Æacide Romanos vincere posse." Here either of the terms "te" and "Romanos" may be taken either as *agent* or *patient*, both of these grammatical relations being expressed by the accusative case.

Another example of amphibology is that of negative propositions in which the word *not* is the sign of negation; as, for ex. *I shall not speak because he desires it*, may signify either that *It is not because he desires it that I shall*

speak, or that His desiring me to speak, is my reason for not doing so.

II. Obscurity of expression has place where the teacher's propositions or arguments fail, in any degree, to convey *positive, exact, or distinct* ideas to the learner's mind. It is productive of fallacy when the learner (ascribing, perhaps, his defective conception to his own want of ability or of application) adopts the teacher's propositions and conclusions, taking for granted their respective connections and dependence, or whatever else there may be that he cannot clearly comprehend. If the reader seeks for examples of obscurity, he has only to open the first German metaphysical treatise, ancient or modern, which he may lay his hands upon; and he will probably not have perused many pages before he finds them replete with obscurity in every shape: and their power of producing fallacy is amply proved by the extraordinary faculty which enables these same Germans, after having bewildered their senses during the perusal of two or three octavos, to come to such a conclusion as the following: "In all plants there is but one *organ*; the root, leaves, petals, seeds, &c. &c., are all the same thing—or were all originally

exactly similar, but have only been modified in order to perform their different functions :'' an assertion which I have often heard seriously argued by botanists of the German school, otherwise clever and intelligent.

An obscure expression is either *vague* or *confused*. In the former case it is chiefly the nature of the *import* of the words that is productive of obscurity ; *confusedness* usually arises from their *collocation*.

1. Vague nomenclature may be exemplified in the instance of the words *philosophy*, *reasoning*, &c. and in that of a great number of general ethical terms, (*virtue*, *vice*, *charity*, *faith*, &c.). On these occasions, the teacher may perhaps entertain, in his own mind, exact and distinct correspondent ideas ; yet, to the learner, they will always appear more or less vague, unless accompanied by precise and repeated exposition. Thus it is that these words, by their obscurity, must produce more or less of fallacy in all arguments in which they are introduced.

2. Confusedness of expression is often observed in the writings of certain authors, whose long-winded arguments grow, as it were, one out of the other, in one never-ending sentence, and

are accompanied and intersected with so many incidental and often irrelevant clauses, that, before the reader has reached a full stop, he has completely forgotten the point whence he started and the object of the discourse, as well as the respective connection of its component parts. An over attention to general rhetorical elegance, and the contrary efforts to sacrifice every thing to the preciseness of each individual proposition, (as, for ex. in our legal and statute language), may be alike productive of general confusedness. This defect may also originate in a want of ability, on the author's part, of embracing the whole of his subject at once, and from his giving way to that natural propensity of the human mind to wander in its thoughts from one subject to another, as suggested to his memory by any accidental *apropos*. See hereafter Fallacies of Artful Diversion.

III. Error of expression has place when a different idea is conceived by the learner from that which was intended to have been expressed by the teacher, though at the same time each may, in his own mind, have attached a clear and distinct idea to the expression in question.

Error of expression, with regard to names of

real entities, seems little worth mentioning as a source of fallacy ; as, in such cases, it does not proceed from inattention on the part of the teacher, but chiefly from mistake or ignorance ; and in that case the learner's misconception is owing to his not having duly weighed the value of the teacher's testimony ; and the fallacy exemplified is referrible to the head of Defective Evidence. If a man calls a horse a dog, or a book a table, through ignorance, his testimony is defective by the *erroneousness of operation of his intellectual faculties* ; if he wilfully misuses any such names of real entities, his *moral dispositions* are defective—he *tells a lie*. See, in the preceding chapter, what has been said on the value of Evidence, and hereafter the Fallacies of Defective Evidence.

It is then to the misuse of fiction that fallacies of erroneous expression must be attributed. Fiction, it has already been shown, is absolutely necessary in all discourse, and that to such a degree, that it is scarcely possible on all occasions to guard against fallacy from this cause. The connection between a fictitious entity and its type is in most cases so vague and uncertain, that, to ensure correct conception, it would require an exact definition of the meaning intended to be attached to

the name of every fictitious entity on the part of every succeeding author. This, however, cannot have place, on account of the diffuseness which would be the result. Every author, therefore, selects for exposition such terms only as he considers, at the same time, as the most important and the most liable to misconception. But these very terms may be such as appear to be the plainest to his readers; and there may be many others, upon which his whole arguments may rest, that may be taken in an entirely different sense from that which he had in view, and thus convert a whole treatise into absolute nonsense. When a reader is puzzled with his author's arguments, his first attention should be directed to the meaning to be attached to the *words*; and in order to facilitate, on all occasions, the ascertaining the correctness of the ideas conveyed, no author, whose object is perspicuity and instruction, should fear the multiplication of expositions of terms.

For the exemplification of fallacies of fiction (by which name we may designate such as arise from erroneous expression, as above limited), we may refer to that head the following species :

1. Ascribing reality to a fictitious entity.

This is a very common source of error, and is much used by rhetoricians. All fallacies in ethical and physiological arguments, derived from the personification of Reason, Nature, &c., may be referred to this head.

2. Assuming that the connection between two fictitious entities is the *same* as the *corresponding* connection between real entities, that is, as the real connection designated by the same name. Thus when we say that a genus *contains* so many species, we do not represent to ourselves that a genus is a receptacle which would still remain (though empty), if all those species were taken away from it, but that it consists of, or is divided into, so many species; and yet, if it be kept in mind that figurative expressions must not be argued upon in their real sense, there appears to be no great inconvenience in adopting the common expression, that "a genus contains its species."

3. Ascribing reality to a collective entity, that is, the supposing that a common name is the name of some one really existing object, distinct of course from every individual object contained in the collective entity in question. The errors arising from this source are frequently

mentioned by Dr. Whately (p. 49, p. 259, &c.), and have also been adverted to in the course of the preceding pages of this Outline.

4. Mistaking the extent of the name of a collective entity. When a generic term is made use of by the teacher to designate one particular species of the genus,—the only species, perhaps, which occurs to him at the moment, or, at any rate, that which appears to him the most important, *the species par excellence*,—and when the learner at the same time applies that same term to the whole genus, or to some other of its species, his conception is *erroneous*,—he is mistaken as to the *extent* which the teacher intended to ascribe to the term in question. The example given by Dr. Whately of the word *faith*, employed by Christians to denote the Christian faith, by Mussulmen to denote the Mahometan, &c. belongs to the present species of fallacy, (provided the double meaning be considered as seated in the generic word *faith*). But I cannot agree with this author in considering the word *faith* as having “not two different senses, but two different applications.” If the “Christian faith” and the “Mahometan faith” be both designated by the same name, these two entities

being *different* from one another, that name which is common to both must surely be considered as having two *different* senses. "A word, having a particular sense," and "a name, being applied to a particular object," are, I should think, but two modes of expressing the same idea*.

5. An error, closely allied to the preceding, is, the mistaking the object to which a relative

* "The elliptical character of ordinary discourse causes many terms to become practically ambiguous, which yet are not themselves employed in *different* senses, but with different applications, which are understood. Thus, 'The Faith' would be used by a Christian writer to denote the Christian Faith, and, by a Mussulman, the Mahometan; yet the word Faith has not in these cases, of *itself*, two different significations. So ἐκλεκτοί, 'elect,' or 'chosen,' is sometimes applied to such as are 'chosen,' to certain *privileges* and *advantages*; (as the Israelites were, though they were overthrown in the wilderness for their disobedience; and as all Christians are frequently called in the New Testament) sometimes again to those who are 'chosen,' as fit to receive a *final reward*, having made a right use of those advantages; as when our Lord says, 'many are called, but few chosen.'" Elements, p. 164.

In the latter example, the generic term "chosen" is employed, in the first instance, to designate the species "chosen for certain privileges and advantages;" afterwards to denote the species "chosen for a final reward."

expression refers ; as, for ex. if two adversaries were to discuss the merits of any particular person, first designated by both parties by some such expression as " the man who was there," &c. and were each to have in view some *different* man. But this error is comparatively unimportant, as being rarely exemplified, and producing, in general, but a momentary fallacy.

6. Fallacies of paronymity—the assuming that the difference in sense of paronymous words corresponds to the modifications given by the *conjugation*.

Paronymous words, taking the term in its most general sense, are all those which are derived from the same root. Words are *derived* from a root when, an entity being designated by any *name*, other words, either names of entities, or abbreviative words, are formed by modifications in that *name* or *root*. The words so formed are said to be *conjugates* of their root, or of one another.

When these modifications in sense, so designated, are reducible to regular classes, and are, moreover, applicable to all words of the same *part of speech*, the relations between the conjugates are termed *grammatical relations*, and the

conjugates are more especially denominated *inflections*. Such are those of *case*, *number*, and *gender*, as applied to the noun, substantive or adjective; of *degree*, as applied to the adjective; of *voice*, *mood*, *tense*, *number*, *person*, and *gender*, as applied to the verb, &c. In the case of these grammatical conjugates there is seldom any alteration in the sense of the root but that which is designated by the inflection: it is seldom, therefore, that any fallacy is to be apprehended from their use.

But in regard to those less regular conjugates, which are more particularly termed *paronymous words*, and which belong either to different parts of speech (as, for ex. *actor*, to *act*, *active*, *actively*, &c.), or to different classes of words in the same part of speech, (as *governor*, the *governed*, *government*, &c.), the root often undergoes some modification in sense besides that which is indicated by the conjugation. The neglecting to take these modifications into account is the source of the present fallacy of paronymity, which answers to that one termed by Dr. Whately “*Fallacia figuræ dictionis*” (*Elements*, p. 157). In the example he gives of the words *project* and *projector*, the former word designates

the result of an operation; the latter the apparently corresponding operator : but in fact the word *projector* implies, moreover, an expression of vituperation, which *project* does not. The use which Dr. Whately appears to have made, in his Introduction *, of the words *reason* and *reasoning*, may furnish another example of this species of fallacy †.

7. The fallacies of etymology are closely allied to the preceding, as shewn by Dr. Whately, p. 161. They appear, indeed, to refer only to those

* See above, Ch. II, p. 16.

† The distinction between grammatical and other conjugates is very vague, and may perhaps be said only to consist in the greater regularity of the former ; that is to say, that grammatical conjugates more rarely differ, otherwise than as expressed by the inflection. Yet this is not always the case ; as, for ex. in the English future tense, “ I shall go ” merely indicates futurity ; “ You shall go ” intimates a command ; so likewise, “ You will go ” simply expresses futurity ; and “ I will go ” implies determination. The distinctive character given in the text, that grammatical conjugates are applicable to all words of the same part of speech, is only *relatively speaking* ; for then comes the question, as to what is, and what is not, to be considered as a separate verb, substantive, &c. “ Regor ” is commonly said to be—not a separate verb—but the *passive* of “ rego ; ” and yet, “ governor ” and “ the governed ” are said to be substantives, distinct from “ government,—not grammatical inflections of this substantive.

cases of fallacious paronymity where the conjugates are the more remote in sense or in form.— See, for examples, Whately's *Elements*, p. 161.

These several fallacies of expression will be found to be very convenient instruments in the hands of the sophist, for the fallacious reduction of arguments, that is, for the reduction of a fallacious argument to a form approaching more or less to the syllogism, at the same time altering imperceptibly the propositions of which it may consist, so as to make it produce conviction in his adversary's mind. In the instance of any of the fallacious arguments which I have pointed out as observable in the course of Dr. Whately's *Elements*, it might not, perhaps, be found difficult to reduce them, apparently, to correct syllogisms, by means of a small degree of ingenuity in profiting of double meanings of terms, of the non-correspondence in sense of paronymous words, &c.

Returning now to fallacious ideas, the second general division of fallacies, and which I have said to be such as “arise from the nature of the ideas themselves;” they may be generally referred to the following heads :

I. Fictitious argument.

II. Defective argument.

III. Irrelevant argument.

These classes may not, perhaps, be found to be so distinct in some of their details as might be wished ; but, in every deceptive argument, the fallacies exemplified are usually so numerous, and so intimately blended together, that it becomes a very difficult operation to reduce them to regular and distinct heads. In the following enumeration, my object is chiefly to exhibit the most important and most common modes, in which more or less of erroneous conviction is produced ; I do not, therefore, give this list of fallacies as *complete* ; and, with regard to their arrangement, I have merely endeavoured to group together those which appear to bear the greatest analogy to one another, in order that they may be the more easily retained in the mind and glanced over, when it is wished, for the purpose of refutation, to discover what particular fallacy has been made use of in an adversary's argument.

I. A fictitious argument is that which elicits no fact or assertion, other than such as were expressed in the propositions from whence the sophist has started. To this head may be referred the following fallacies :

1. *Petitio principii*, or begging the question, that is to say, assuming in the premises the very thing you wish to prove. This may be in some measure productive of fallacy, by the mere substituting in the premises synonymous terms for those made use of in the conclusion, as in the example given in the Book of Fallacies, "Why does opium produce sleep? Because it is soporiferous;" or in that given by Dr. Whately, "to allow every man an unbounded freedom of speech must always be, on the whole, advantageous to the state; for it is highly conducive to the interest of the community, that each individual should enjoy a liberty, perfectly unlimited, of expressing his sentiments." But *petitio principii* is a much more efficient fallacy, when the fact to be proved is indirectly assumed in the premises, by means of some term which implies it, but does not so openly assert it; as, for ex. if it were argued that "This action was a most virtuous one, therefore, the man who performed it deserves to be highly commended for it." Here, *virtue*, and *that which deserves to be commended*, are in fact two names for one and the same thing.

One mode of disguising the concluding as-

sertion in the premises, is by exhibiting it in the conditional form, as if it were the intention of the arguer to prove it ; and, after more or less *verbiage*, by concluding with the same assertion, given in a positive form, but without its having been supported by any thing but the original conditional assumption. In this instance *petitio principii* is combined with artful diversion.

I do not comprehend under the *petitio principii* all the fallacies arising from the *question-begging appellatives* of the Book of Fallacies (Part IV, Ch. I) ; as they appear to me to be referrible, in some cases, to *confusion of ideas*, in others to *fallacious qualifications*.

2. Arguing in a circle. This fallacy has place when a conclusion is deduced from premises which have themselves been proved by means of the assumption of the proposition which forms the conclusion in question. See the example relating to gravitation, &c. in Dr. Whately's Elements, p. 180.

II. Defective argument—referring, of course, to inductive arguments in particular, as the fallacies of expression relate rather to the syllogism. The different sources of fallacy exemplified in a defective argument must correspond, in some

measure, to the different considerations upon which the validity of a sound one has been said to depend, and may therefore be distributed, in a manner analogous to that in which these considerations have been classed, under three general heads. I. Defective evidence. II. Defective generalization. III. Defective application.

I. Defective evidence—becomes a source of fallacy when the sophist induces his opponent to neglect, to gloss over, or to misconstrue any of those elements of evidence, referred, in the last chapter, to the heads of *personal observation*, *testimony*, and *previous induction*. I shall not repeat what I have said in the exposition of these elements in my preceding chapter, but shall merely add a few examples of the most common fallacies of evidence.

1. Fallacies of personal observation—are produced, when physical facts or phenomena are so exhibited or commented upon as to produce inattentive, or even directly erroneous observation. The illusions by which men have, for some particular purpose, been persuaded to believe that they actually saw or heard spectres and phantoms; Richard the third's exhibition of the pretended effects of witchcraft on his arm:

the erroneous observation of inspecting visitors, &c. resulting from the efforts of prison keepers, accountants, or office holders in general, to *prepare* for their visits, &c., are all examples of the present species of fallacy. Jugglers' tricks, theatrical illusions, &c., not producing belief in the results exhibited, are not fallacies, but bear the same relation to the present class, which jests and puns bear to fallacies of expression.

2. Fallacies of testimony—are the effect, either of an artful misrepresentation or colouring of well-attested facts, or of endeavours to depreciate or to enhance the moral or intellectual credibility of the attesting witnesses. No example can illustrate this class of fallacies in a more striking manner than that of the judge, who, after summing up a case, so as to produce in the minds of the whole audience a conviction of the justice of the plaintiff's demands, by clear and incontrovertible proof, apparently resulting from the testimony, shifted his ground, and recommencing his exposé, produced, from the very same evidence, an equally convincing statement of the defendant's right. The variations in the inferences drawn by adverse his-

torians from the same series of events, are additional proofs of the repeated occurrence, the facility in practice, and the difficulty of detection of fallacies of testimony.

A very common mode of misrepresenting well-attested facts is by the gratuitous application of fallacious epithets ; that is, by the giving, to facts or to objects, epithets expressive of some qualifications ascribed to them, for the purpose of argument—not because the objects are really supposed to be possessed of such qualifications. This fallacy is chiefly applicable to ethical subjects, and comprehends most of Mr. Bentham's *question-begging appellatives* (Book of Fallacies, p. 213) ; his *impostor terms*, p. 221 ; *matchless constitution*, p. 236 ; *glorious revolution*, p. 256 ; and perhaps the *paradoxical assertions* contained in Part IV. Chapter X. of the same work.

To the head of fallacies of testimony belongs also that which Dr. Whately has defined and exemplified (Elements, p. 185) under the name of fallacy of references. In France, where it is the custom to give the authority and rationale (*Les vûs et considérants*) of local and other acts of the various administrations and judicatures, it

is often found convenient to support an unjust *arrêté* by reference to laws and regulations, which to the vulgar eye may exhibit, in the title at least, some distant analogy to the case in point, but which, upon investigation, are discovered to be totally irrelevant. Considered in another point of view, this example might also be referred to the head of irrelevant argument, with which defective testimony is closely connected.

With regard to the “undue assumption of premises” in general, that is, to the assertion of individual facts not sufficiently well attested, no general rules can be given as to what is or is not *sufficiently* well attested; this must depend, in each individual case, not only on the general value of the elements of evidence, but upon the nature of the object in view, and on the judgment of the person to whom the argument is addressed. A fact which may be considered as highly probable by one person, may be judged by another person, from the same grounds, to be equally improbable. If a close investigation of the several observations, testimonies, and inductive processes, upon which the truth of the fact has been assumed, cannot settle a dispute on the correctness of the assumption, neither party can

hope to convince his adversary by any other logical process ; for no inductive argument, as has been already shown, can produce positive incontrovertible proof.

II. Defective Generalization. To this head may be referred the following classes of fallacies.

1. Undue generalization. This applies to inductive generalization, and has place when constancy is ascribed to a fact from insufficient grounds ; as, for ex. when, from one individual act, a habit or custom is inferred. Thus, if a man, upon some one occasion, perhaps under some extraordinary temptation, had appropriated to himself some property not belonging to him, and if he were to be set down as an habitual *thief*, and ejected from society without enquiring into other circumstances of his character ; or if a traveller were to give a general account of the character, manners, and customs of the nations he visited, from one or two individual observations ; these fallacies would belong to the present head, of which other examples may be found in my last chapter.

From the Book of Fallacies we may refer to the present species the *sweeping classifications* exemplified by the expressions, “ crimes of kings,”

p. 265, and "cruelties of Catholics," p. 266. Also the fallacy of popular corruption, p. 279.

2. Vague generalities—"comprehend a numerous class of fallacies resorted to by those who, in preference to the most particular and determinate terms and expressions which the nature of the case in question admits of, employ others more general and indeterminate." Book of Fallacies, p. 230*. Besides the words *order*, *establishment*, and *balance of power*, which are given in that work as instances of vague generalities with reference to political argument, we may in physical science refer to this head the vagueness of such assertions as "Nature has an object in all her operations, and all her works are adapted to their intended use;" a proposition to which no one has probably ascribed any definite meaning, and which may be argued for or against, according

* In the same page of the work here quoted we find the following definition: "An expression is vague and ambiguous when it designates, by one and the same appellative, an object which may be good or bad, according to circumstances." The editor has probably not perceived that he applies here a *generic* definition to *one* species of the genus. He should have said, "*One species* of vague and ambiguous expression is that which designates, &c."

to the construction put upon it. "Matchless constitution" and "glorious revolution" included in this class by the author of the Book of Fallacies, appear to me to be more appropriately referred to *fallacious epithets*.

3. Vague distinctions, or *sham* distinctions of the Book of Fallacies, p. 271. I prefer the epithet *vague* in the present instance, as more appropriately designative of the fallacies here mentioned by the author of the Book of Fallacies. For it is admitted, for instance, that the press *may* convey unjust imputations against the private character of individuals, and that such imputations may be productive of very serious injury, and therefore require repression. A distinction, therefore, there must exist, between *liberty* and *licentiousness* of the press. This distinction is at present *vague*, and thereby produces fallacy in argument, but it does not appear to me to be *sham*.

The fallacies of "good in theory, bad in practice," Book of Fallacies, p. 303, and "From the abuse, argue not against the use," id. p. 339, arise from the vagueness of the distinctions between *theory* and *practice* and between *abuse* and *use*. In physical science, the vague distinctions established between the leading terms,

have been pointed out in a former work to which I have already referred * ; and, in the course of the preceding pages, instances of the same defect have been mentioned, as having been observed in Dr. Whately's Elements.

4. Sham distinctions. I have just said that I do not consider as absolutely *sham*, the distinctions so denominated in the Book of Fallacies ; yet it must be admitted that many authors have often laboured hard to establish distinctions, when really, according to their own definitions, there exists none. Such are D'Alembert's distinctions between " Histoire naturelle des animaux, plantes et minéraux," and " Zoologie, Botanique et Minéralogie†." Such are those of Logicians between the *meaning of a term* and the *nature of the thing represented* by that term ; between the *sense* of a word and its *application*, &c.

5. Fallacies of confusion—not confusion of expression, arising from the names only of the

* See Mr. Bentham's Chrestomathia and my Essai sur la Nomenclature et la Classification.

† See his Système Figuré des Connoissances Humaines, in the Discours Préliminaire of the Encyclopédie.

ideas, and of which I have treated under the head of obscurity of expression,—but confusion in the ideas, that is, the *confounding* together entities which are different in their nature.

One of the most common of these fallacies of confusion is that which has been called *non causa pro causa*, or the mistaking, for the cause, that which is not the cause. Thus an *obstacle* is mistaken for the cause, when the system of education pursued in our universities is represented as the cause of useful national learning (Book of Fallacies, p. 334). So it has frequently been announced that the destruction of all government would be productive of perfect individual liberty, when in fact it is the greatest obstacle to it.

The *effect* may also be mistaken for the cause; as, for instance, when the Turks are excused for their ill-treatment of the Greeks, by representing it as the natural effect of the depravity of these their subjects, when it is rather this tyrannical treatment the Greeks meet with from their oppressors that is the cause of their depravity.

On the present occasion it may have been observed that the denomination, *fallacies of confusion*, has been taken in a much more limited

sense than that which is given to it in the Book of Fallacies. I have endeavoured to class, and consequently to name, fallacies either according to their subject-matter or to their source : Mr. Bentham's denominations are occasionally (as in this instance) derived from the supposed *object* of the sophist. His fallacies of confusion are those which produce confusion and perplexity : mine are those which arise from the confounding together distinct entities.

6. *Post hoc ergo propter hoc*,—a very common argument, and frequently a fallacious one, in the instance of a variety of physical subjects. In medicine, it is, on many occasions, the only argument upon which the efficacy of remedies can be established ; and when the recurrence of the *post hoc* is frequent, with comparatively few instances to the contrary, the inference of the *propter hoc* may not be unfair. But when applied to individual instances, it becomes completely fallacious.

7. Co-existence implies dependence. It has been argued, in the same manner, that when two things are constantly observed to accompany one another, the one *must* depend upon the other. Thence, for ex. in natural science, classes have

been formed from two properties which have been found to exist together in certain animals or plants ; and it has been asserted that one must depend upon the other, and that therefore every object possessed of one must have both. Some time after, a new being has been discovered possessed of one of these properties and not of the other, and the whole theory falls to the ground. Nothing has contributed more to the overthrow of physiological systems, than the discovery of so many anomalous animals and plants in New Holland.

8. Similar effects must be derived from similar causes. The fallacy arising from the too general assumption of this rule has already been fully exposed in the chapter on Induction, to which I must also refer for examples.

III. Defective application—referring to the third general class of the elements of induction, namely, to the “application of the general rule to the individual case in question.” From this source are derived the following fallacies :

1. Fallacious analogy—having place when a fact is exhibited as being referred to by a general proposition which is not fairly applicable to it.

2. Neglect of obstacles or of contradictory or modificative propositions.—See the chapter on Induction for the exposition of these two sources of fallacy.

3. Fallacy of illustration—that is, when a general analogy is argued from a partial resemblance of two individual cases—a fallacy explained and exemplified by Dr. Whately, under the name of *parallelism* (Elements, p. 186). The *similes* of rhetorical sophists belong to the present head.

4. Insufficient argument—when the argument does not prove so much as what is asserted in the conclusion: See Whately's Elements, "Fallacy of proving a part of the question," p. 199.

III. Irrelevant argument. Under this denomination, I should comprehend any general arguments, not really connected with the subject-matter of discussion, but adduced by the sophist, with a view to deterring his opponent from applying his reasoning faculties to the drawing a fair inference from the data set before him. This class answers in some measure to Dr. Whately's *irrelevant conclusion*, or *ignoratio elenchi* of

other logicians; it may be subdivided into the three following species; I. Fallacious authority; II. Irrelevant objections; III. Artful diversion.

I. Fallacious authority. Fallacies of authority consist in the sophist's adducing, in various shapes, *authority* which appears to support a question different from that which would be deduced by fair reasoning,—in his causing his adversary to trust rather to the opinions of persons inconsiderately reckoned infallible, than to his own powers of ratiocination. For the *analysis* of authority and of the cases where an appeal to it may be fallacious, I must refer to the Book of Fallacies, Part I. Chap. I., where the subject has been treated of with a degree of detail which renders useless any further investigation on the present occasion. Among the *species* of fallacious authority we may enumerate the following.

1. Appeal to the wisdom of our ancestors,—the arguing in favour of the introduction or continuance of any measure, because it was practised or approved of by men who, in former times, inhabited the country of those who are discussing it,—these practices and opinions being collected, either from the express words of some

writer living at the period of time in question, or from laws and institutions that were then in existence. See Book of Fallacies, p. 69.

2. Appeal to the vices of existing institutions. The arguing, from the supposition that every measure derived from our ancestors must be bad,—for the entire suppression of existing institutions, and for the general adoption of new systems without sufficient practical experiment. This fallacy is not admitted in the Book of Fallacies; but it appears to me to be frequently productive of great evil. Under the name and disguise of a zeal for the reform of abuses, what immense havoc and devastation has there not been produced in modern revolutions? The present fallacy is the opposite defect to the preceding one. It may not be so generally exemplified, nor so pernicious in its results, as the “appeal to the wisdom of our ancestors;” but there certainly are instances when its influence is very prejudicial. It appears to arise from the natural self-love which reformers possess as well as other men, from their blind admiration for all theories of their own creation. In the case of every *new* system, there is a probability of there being some inconveniences arising from its first adoption,

which may have been overlooked by its author ; and for the purpose of discovering and obviating such defects, it may, on many occasions, be advisable not to adopt, on a large scale, many apparently excellent institutions, till they have been thus *tried* on a small scale. Individuals, farmers and manufacturers in particular, are well acquainted with this rule, which may be equally applicable to governments and other public bodies.

3. Appeal to irrevocable laws and vows,—the considering certain laws and vows as *irrevocable*, that is to say, as absolutely indissoluble, even by the concurrence of the parties who made them, with those for whose benefit they were made,—and therefore the rejecting, upon this ground only, measures which would otherwise receive the consent of both parties. See Book of Fallacies, p. 82.

4. Laudatory personalities,—the arguing in favour of a measure, an opinion or doctrine on account of the alleged good character of those who support, profess, or profit by it. See Book of Fallacies, p. 123. The *self-assumed authority* of the same work may be also referred to the present head. In this case it is to his own cha-

racter that the sophist applies the laudatory expressions.

II. Irrelevant objections. This term may be applied to the designation of those fallacies which consist in the arguing for the rejection of proposed practical measures or scientific doctrines, by the adducing general irrelevant objections for the purpose of preventing fair discussion. These objections are exemplified in the following fallacies.

1. Vituperative personalities. "The object of vituperative personalities is to effect the rejection of a measure, on account of the alleged bad character of those who promote it." Book of Fallacies, p. 123. "The fallacies that belong to this cluster may be denominated—1. Imputation of bad design. 2. Imputation of bad character. 3. Imputation of bad motive. 4. Imputation of inconsistency. 5. Imputation of suspicious connections. 6. Imputation founded on identity of denomination." Id. p. 127.

2. Innovation,—the objecting to a proposed measure or doctrine on account of its being an *innovation*, that is a *change*, and thereby supposing that every change must be a bad change. See Book of Fallacies, p. 143.

3. No precedent,—the objecting to a proposed measure or doctrine, on the plea of its being *novel* and *unexampled*,—of its having never before been put in practice or adopted. Id. p. 113. This fallacy is scarcely distinguishable from the preceding one.

4. Rejection from partial objections,—the arguing for the rejection of a measure or doctrine because there *are* objections against some part of it, without considering whether there be not preponderant reasons in favour of it, or objections to the *alternative*, that is to the measure which must be adopted if this be rejected ; or whether in the adoption of the measure in question these objections cannot be obviated. The *fallacy of objections* of Dr. Whately (Elements, p. 197) refers to the present species which is denominated *rejection instead of amendment* in the Book of Fallacies (p. 349).

5. Dangerous consequences. This fallacy is exemplified when,—“an arrangement or set of arrangements being proposed, so plainly beneficial, and at the same time so manifestly innoxious, that no prospect presents itself of bringing to bear upon them, with any effect, the cry of no innovation,”—the objector argues on the

supposition of there being some more remote and hidden evil intentions on the part of the proposer, and frightens the supporters with the idea of some dangerous and undefined consequences which may ensue. This is the *fallacy of distrust* of the Book of Fallacies, p. 154 ; and we might, perhaps, refer to it also the *official malefactor's screen* of the following chapter of the same work (p. 158).

III. Artful diversion. In employing this class of fallacies, the sophist endeavours to divert the attention of his audience to some topic unconnected with the question in discussion, and thereby to procure a tacit assent to his measures, or admission of his doctrines, or a forbearance from, or delay in, altering or rejecting such as he is desirous of preserving. The following are the principal species referrible to this head.

1. Diversion by the form of argument used. Such are the *fallacies of combating the two premises alternately* (Whately's Elements, p. 196), the *suppressed conclusion* (id. p. 201), &c.

2. Fallacies of excitation—consisting in the exciting the passions or affections (the indignation, admiration, wonder, curiosity, shame, &c.)

of the audience, and thereby inducing them to adopt a conclusion which is inconsistent with fair ratiocination. Such are, for ex. the *argumentum ad populum* (Whately's Elements, p. 191), the excitation of shame and wonder mentioned by the same author, p. 184, &c.

3. Comparative insignificance. The deterring your adversaries from the consideration of a proposed measure by the exhibition of some more important one, to which it is asserted that the *preference* should be given, when the two are not *incompatible* with one another. The denomination of *artful diversion* is exclusively reserved to this species in the Book of Fallacies (p. 209).

4. Fallacies of delay,—consisting in the sophist's diverting his opponents from the consideration of a proposed measure, by means of some expressions tending to induce *delay*; as, for ex. "This is not the time," "Not too fast, one thing at a time," &c. (Book of Fallacies, Part III, Ch. 1, 2, 3, 4.)

Having thus given a general outline of a system of classification of these instruments of deception, I must refer to Mr. Bentham's Book of Fallacies for any further investigation which

may be required of fallacies in general, of their causes and mischiefs, of the use of their exposure, and of the different degrees of fallacy of which the same argument is susceptible, according to the cases to which it is applied. I have only to observe, on the present occasion, that many of the propositions quoted in the course of the preceding pages, as examples of fallacious arguments, may in some instances become perfectly fair and conclusive. If, for example, the blind observance of the laws and opinions of our ancestors, and a universal confidence in their wisdom, are practically pernicious, and therefore theoretically fallacious; yet there are certainly instances of our ancestors having known better than ourselves on particular points. The fallacy lies in the *general* assumption of the proposition; and the contradictory assertion, if taken universally, would also be fallacious, though in a much smaller degree.

Referring now to the view Dr. Whately has taken of the subject, we perceive that he first distributes fallacies into three classes, the *purely logical*, the *semi-logical*, and the *non-logical*.

Purely logical fallacies are defined to be those which are exhibited in the form only of the

expression, without any regard to the *meaning of the terms* ; these terms being supposed to be exactly defined, and free from any ambiguity or obscurity. In the same manner, as no regard is to be had to the sense, the argument must be supposed to have been also previously reduced to a syllogistic form ; as this operation cannot be performed “ without any regard to the sense.” But, when the argument is thus reduced, will not any defect in form be so very apparent to any one whose mind is at all capable of any deduction, as to render it useless to speak of such defects as *fallacies* ? that is, as such as cause the argument to be apparently decisive of a false conclusion. Take, for instance, the example, “ Whatever is universally believed must be true, the existence of a God is not universally believed, therefore it is not true.” (Elements, p. 155). This fallacious argument is certainly not yet reduced to a syllogistic form ; for we have in one premiss a substantive term, *whatever is universally believed*, and an adjective one, *true* ; in the second a *different* substantive and adjective, “ *existence of a God*,” and “ *universally believed*” ; and, in the conclusion, a pronoun and the adjective term

of the first premiss—in all, *five* terms, and therefore no syllogism*. The pronoun, it is true, might be reckoned as the same as the noun which it represents; but even then we have one term too many; for I do not see how an adjective expression can be converted into an equivalent substantive one, without *any* regard to the sense,—nor can it, perhaps, be done without a *very close* attention to the meaning, as may be seen in Dr. Whately's examples of the Fallacia figuræ dictionis, p. 158.

Let us now suppose all these “*non-logical*” operations performed, and the above argument reduced to a “pure syllogism containing only three terms;” and to be more certain of disregarding the sense of the terms, let us substitute unmeaning symbols; we have “Every X is a Y, Z is not an X, therefore Z is not a Y.” Who is there who would admit of such reasoning? How can this “unsound mode of arguing” “appear to demand our conviction, and to be decisive of the question in hand, when in fairness it is not”?

* “Every syllogism has three and *only three* terms.” Elements, p. 90.

It may be objected, that when this argument is involved in a complicated labyrinth of words, it may amount to a fallacy ; but then that fallacy does not rest in the *form*, but in the *ambiguity* or *obscurity*, and particularly in the *confusedness* of the *expression*, and thence of the *sense* conveyed in that expression ; and in so far as this is the case, the fallacy belongs to other heads. Dr. Whately admits that this first division is not distinct, that fallacies may frequently be referred to either of its condivident members, a defect which must be more or less observable in any classification of these complicated instruments of deception ; but, in the present instance, the distinction will be found to be eminently vague, and, moreover, useless, if it be considered that any defect in a *pure* syllogism is so obvious as not to be worth designating a fallacy ; and that when the argument is *not* in its simplest form, the fallacy is always referrible to the same author's semilogical, or to his non-logical fallacies*.

* I have thought it necessary to verify these observations, in the example of that species only which Dr. Whately has termed illicit process ; but they will be found to be equally applicable to any of his other *purely logical* fallacies, as it will appear evident by reducing them to the syllogistic form. Thus,

It is for these reasons that, in my classification of fallacies, I have entirely omitted those which Dr. Whately calls "purely logical." Let us now proceed to his *semi-logical* fallacies, which he defines to be "all the cases of ambiguous middle except its non-distribution." Elements, p. 138.

In the next page he gives as a reason for calling these fallacies *semi-logical*, that here Logic teaches us not *how to find* the fallacy, but only where to search for it, and on what principles to condemn it. But, take the example: "Every X is a Y, every Y is a Z, therefore every X is a Z." If Logic is nothing more than syllogistic reasoning, it can detect no fallacy in this argument, which answers perfectly to the rules of syllogism. Now, suppose we are told that there is here a concealed fallacy, does such "Logic" tell us that it *must* rest in the ambiguity of the mean Y? may it not be in the obscurity of X or

for example, the *undistributed middle* (rather a singular expression in the English language): *Every X is a Y, some Y's are Z's, therefore every X is a Z*—or the syllogisms which "have palpably more than three terms," *every A is a B, every C is a D, therefore, every A is a D*, would scarcely produce belief in their respective conclusions.

of Z? or in the ambiguity of either X or Z; these terms meaning one thing in the premiss, another in the conclusion? or in the falsity of either of the *assertions*? If therefore Dr. Whately's limitation of the field of Logic be adopted, that science does not appear to be entitled even to the share here ascribed to it in the detection of "ambiguous middle:" it has been shewn that the fallacies called purely logical, are no fallacies at all; the consequence is that Logic, thus restricted, is totally unconnected with the exposure of any fallacies.

However, the author himself now departs a little from the system of rigorous exclusion he has hitherto pursued. I have already observed that in p. 131 he calls classification and analysis "the taking a Logical view;" again in p. 153 he speaks of *Logical analysis*; and on the present occasion (p. 139) he positively admits that general rules for definition belong to Logic. Let him but admit that the science includes also general rules for induction, and we are perfectly agreed as to the extent of its field.

The passage I have just alluded to is too strongly in support of my opinion, for me to refrain from quoting it.

“It has been made a bitter subject of complaint against Logic, that it presupposes the most difficult point to be already accomplished, *viz.* the sense of the Terms to be ascertained. . . . The objection is peculiarly absurd when urged against Logic, because the object which it is blamed for not accomplishing *cannot possibly* be within the province of any *one art* whatever. Is it indeed possible or conceivable that there should be any method, science, or system, that should enable one to know the full and exact meaning of every Term in existence*? The utmost that can be done is to give some general rules that may assist us in this work.”

The giving general rules is all I require of Logic, and here I agree with the author of the Elements; but I leave it for the reader to judge

* I certainly admit that all this is not the province of Logic; but I should be tempted to ask, in reply, whether it be not the professed object of a *dictionary*? This object is not in general attained so well as it might be wished; but it is as easy to conceive a good expositive dictionary as a good scientific treatise or theory. In order to know the full and exact meaning of a term, there is no occasion to treat of all the different properties of the idea it represents, nor of the relations of this idea with others.

how far he is right when he adds, "which is done in the two first parts of Logic," meaning probably in his *Elements*; where the section on definition, for instance, may perhaps have been shown, in a preceding chapter, to be somewhat inadequate for the purpose.

But to return to *ambiguous middle*, on the occasion of which this digression has been suggested: this fallacy, or rather source of fallacy, which might be more appropriately denominated *ambiguity in the mean term*, belongs to the head of *ambiguity in terms* of my arrangement; and I see no reason for making a separate class of those cases where the ambiguity rests in the mean term, not in the extremes; much less for attaching more importance to ambiguity in this case than in any other, as it may, if any thing, be, generally speaking, easier of detection than that of the extremes.

Under the head of *ambiguous middle* are classed—

1. Fallacy of equivocation (p. 157), not here defined nor exemplified, but meaning, I presume, that which has place when a word is taken in one sense in one premiss and repeated in another sense in the other. I have, as above, adopted this

name; but I have applied it to all cases where a word, forming part of an argument, may be understood in more than one sense. It is, in general, of all fallacies the easiest to detect, and therefore the least important.

2. Fallacia figuræ dictionis (p. 157), where paronymous words are erroneously supposed to have a correspondent meaning. This I have referred, under the name of *fallacy of paronymity*, to the head of *fallacies of fiction*, to which it appears to me to belong, rather than to the head of *fallacies arising from ambiguity*.

3. Fallacia figuræ dictionis, when resting in other terms than the mean (p. 158). 4. Ambiguity in other terms than the mean (p. 159). Do these two fallacies belong to ambiguous *middle*? and if not, is there any use in thus classing fallacious expression according to the *terms* in which it rests?

5. Fallacy of etymology (p. 161). I have said that this is a modification of fallacious paronymity, differing only inasmuch as the conjugates in the present instance are more remote from one another in sense and in form. The fallacy is thereby more apparent, and therefore less important.

6. Fallacy of interrogations (§ 9, p. 162).

This does not appear to me to differ from the ordinary fallacy of equivocation, otherwise than by the form in which the argument is expressed, and by the slight degree of obscurity which is thereby added to it. The proposition to be proved is, in the present instance, given as an interrogation, and the fallacy lies in the supposed answer, not in the question itself. Dr. Whately's first example, taken from Cicero, turns upon the ambiguity of the term "anything expedient;" the second on that of the sign of extent attached to the term "motive."

7. Fallacy of application (§ 10, p. 161). This is a case of error of expression where two persons ascribe a different extent to the name of a collective entity. See above, *fallacies of fiction* No. 4, "mistaking the extent of the name of a collective entity."

8. Fallacy of double construction (p. 165, note). See above *ambiguity in sentences*, under the head of *fallacious expression*.

9. Dr. Whately next gives some instances of ambiguity in terms, which he refers to the following heads:

1. Accidental ambiguity—arising from words being *accidentally* homonymous,—an ambiguity

of very small importance, as it does not appear that, to any one acquainted with the language spoken, the misuse of them would be productive of any thing but evident nonsense.

II. Ambiguity in the first and second intention of a word. This has been applied to the case where a word, originally obscure or vague, has been precisely defined, and is subsequently used both in its original and in its newly-acquired sense. This species of negligent homonymity, though it may not often be the immediate source of fallacy, is frequently productive of much confusion, and is therefore important. I do not however, consider the two significations of such words as being very happily denominated *first* and *second intentions*. The precise scientific sense of a word often comes nearer to that of the root whence it is derived than the more vague and popular sense, and occasionally precedes it in formation; as, for ex. the word *gas*, which was coined by chemists for the designation of any substance when in that particular state; by the vulgar it has subsequently been vaguely attached to combustible gasses in general.

III: Ambiguity from resemblance or analogy. This homonymity is scarcely distinguishable, for

the present purpose, from accidental homonymity whenever the analogy is real : the leg of a table or the foot of a mountain can hardly be confounded with the leg or foot of a man. But when the analogy is *fictitious* (or *fanciful*, as Dr. Whately has it), the *ambiguity* is far more important or rather the error of expression—for it is under the latter head that I have considered this source of fallacy as being more appropriately classed. This subject is scarcely mentioned by Dr. Whately ; I shall therefore refer the reader to what I have said in a former chapter on fictitious entities in general, and to my head of fallacies of fiction in the present chapter.

iv. Ambiguity from ideas being connected by vicinity of time and place. I should rather designate this source of fallacy by the denomination, *homonymity of paronymous words*. Amongst the examples given in the Elements on the present occasion, the homonymity of *operations* and their *results* had been frequently remarked by Mr. Bentham as a great source of confusion in discourse, and thence of error. The double meaning of the word *shot* can scarcely be referrible to the present head, but approaches very near to accidental homonymity.

10. Fallacy of division and composition (Elements, § 11, p. 173). In the section thus headed, several examples are given of fallacies which appear to me to be somewhat heterogeneous in their nature. The two first contain no fallacy, but mere jests, which turn upon the double meaning of the words *all* and *and*. In the third, "He who necessarily goes or stays is not a free agent ; you must necessarily go or stay, therefore you are not a free agent" (p. 174), the fallacy arises from the ambiguity of the conjunction *or*. In the next, "the gaining of a high price, &c." there is a combination of obscurity of expression and error in the extent of collective entities. The latter source of fallacy is that which may be observed in the remaining examples, and appears to be the one which Dr. Whately had more particularly in view in applying to these cases the denomination of fallacies of division and composition.

11. The fallacia accidentis and others, mentioned in § 12 (p. 177), appear to be among those which are founded on obscurity in expression. So it is, at any rate, in the case of "Protestant ascendancy" (p. 178). As to the phrase, "what is bought in the market is eaten &c." the fallacy or rather the jest or quibble, rests in the ambi-

guity of the word *what*, which may mean either *whatever* or *some thing*.

We now come to the material or non-logical fallacies, which lie in the sense either of the premises or of the conclusion, not in the connection between them. Such, at least, is the definition which may be gathered from what is said in p. 141. Whether this denomination is an appropriate designation of the group of fallacies to which it is applied, is a question which may best be answered by a short examination of the several species it contains.

These species are arranged by the author under the three following heads: I. Begging the question. II. Undue assumption. III. Irrelevant conclusion.

I. Begging the question or *petitio principii*,—which I have referred, under the same name, to the head of fictitious argument. The argument in a circle (also a species of fictitious argument) is here reckoned as a *petitio principii*; but I have thought it more convenient to restrict the latter denomination to that species of fictitious argument in which the question to be proved is announced in the premises, though it be in disguise, as in the example given by Dr. Whately

in p. 181, where the conclusion is a repetition, in other words, of the proposition exhibited in the premiss. In an argument in a circle, of which an example is given in p. 180 of the Elements, each separate reasoning process may be such as to exhibit no other fallacy than that of defective evidence ; but the whole chain of reasoning, when connected together, shews that no one proposition can be adduced in support of the others, as the validity of each one rests only upon that of those others. This sort of reasoning may be illustrated by the theory of the ancients, who supposed the sky did not fall because it was supported by pillars resting on the earth ; the earth, in the same manner, did not fall because it was suspended from the sky by chains. In the state of knowledge at that time, there was no reason to deny that either of these causes separately might be followed by such their respective effects ; but, put the two arguments together and the question is immediately suggested : Why do not both earth and sky fall down together ?

II. Undue assumption (§ 14, p. 181). That of the minor premiss may in general be referred to my defective evidence : the undue assumption, or rather supposed assumption of a major pre-

miss, is what I have termed undue generalization.

But the "contrivances by which men may deceive themselves or others, in assuming premises unduly," are most of them fallacies of a different nature. Dr. Whately's examples may be distributed as follows :

1. In Horne Tooke's induction (Elements, p. 183), relating to nouns and verbs, the fallacy is that which I have termed fallacy of etymology, applied, in the present instance, to an universal proposition.

2. When men are shamed into admitting a false fact by being assured that it would argue weakness to doubt it (p. 184), the fallacy is one of irrelevant argument, and contains a mixture of vituperative personalities and of fallacies of excitation.

3. When the truth of a fact is caused to be admitted by the assertion that it is curious or remarkable (p. 184), the fallacy is one of excitation, referrible to the head of artful diversion.

4. The fallacy of references (p. 185) has above been classed with the fallacies of testimony.

5. The fallacious parallelism (p. 186) is that which I have denominated fallacy of illustration.

III. Irrelevant conclusion or *ignoratio elenchi* (§ 15, p. 187). This genus is defined "the coming to a conclusion which is not the one required," and contains a variety of fallacies which I should distribute in the following manner :

1. "If a sophist has to defend one who has been guilty of some *serious* offence, which he wishes to extenuate, though he is unable distinctly to prove that it is not such, yet if he can succeed in *making the audience laugh* at some casual matter, he has gained practically the same point," p. 187. Here there appears to be no irrelevant conclusion—nor indeed any conclusion at all. The fallacy is that which I have termed artful diversion.

2. "Let it be a case of peculation, and that many *mitigating* circumstances have been brought forward which cannot be denied, the sophistical opponent will reply, 'well, but after all, the man is a *rogue*, and there is an end of it,' " p. 188. This belongs to fallacious epithets, which I have classed under defective testimony.

3. The fallacy quoted (p. 189) from Thucydides, where Cleon proved the *justice* of a measure, when its *expediency* was the question, is a case of artful diversion.

4. "When in a discussion one party vindicates, on a ground of general expediency, a particular instance of resistance to government in a case of intolerable oppression, the opponent may gravely maintain, that we ought not to do evil that good may come." p. 190. In this answer there is both obscurity in the terms *good* and *evil*, and defective application of the general proposition contained in the answer, to the particular case in question.

5. Argumentum ad hominem (p. 191) is referrible either to vituperative or to laudatory personalities.

6. Argumentum ad verecundiam (p. 191) to fallacies of authority.

7. Argumentum ad populum (p. 191) to fallacies of excitation.

8. The shifting the burden of proof to the adversary, as in the case of the sportsman who, when accused of barbarity in sacrificing unoffending hares to his amusement, answers, "why do you feed on the flesh of animals?" (p. 192, note) belongs to the head of artful diversion.

9. In the example relating to the efficacy of

faith (p. 193) the fallacy is in the expression, and belongs to the head of error in extent of a collective entry.

10. The note to p. 194 refers, in the first place, to fallacies of excitation. With regard to the other observations contained in the same note, I may presently have occasion to return to them.

11. The example relating to the neglect of the study of mathematics in one of our universities (p. 195) is one of artful diversion.

12. The fallacy of combating the two premises alternately (p. 196) is artful diversion by the form of expression.

13. The fallacious substitutions of the partial for the universal, the possible for the probable, the probable for the necessary, &c. (p. 196) are fallacies of insufficient argument.

14. Fallacy of objections (§ 17, p. 197). This answers, in some measure, to the rejection instead of amendment of the Book of Fallacies. It is one of the fallacies most commonly exemplified in the arguments both of innovators and anti-innovators. I have designated it by the name of rejection from partial objections, and classed it as a species of irrelevant objections.

15. Fallacy of proving part of the question (§ 18, p. 199). This is again the fallacy of insufficient argument.

16. Suppressed conclusion (§ 19, p. 201) is another instance of artful diversion by means of the form of expression.

After a chapter so long as the one I am now speaking of, devoted to the exposure of fallacies, it would be rather unfortunate for the author to terminate by affording an example of fallacy in his own discourse. Any one, it is true, is liable to fall into error ; it is much easier to detect fallacies than to avoid them ; the reader may, perhaps, have observed them in unlimited number in the preceding pages, in the same manner in which I have pointed out occasional ones in Dr. Whately's Elements, and, so far, the one which I now speak of may be excused. What I allude to is in section 20 of this chapter on fallacies of that work, where the author speaks of the "*just* and ingenious remark, that jests are fallacies." A fallacy has been stated by him to be " an unsound mode of argument, which appears to demand our conviction, and to be decisive of the question in hand, when in fairness it is not." After this definition, I do not think it

too much to assume that, to be fallacious, an argument must be so formed as to produce some degree of deception ; otherwise it would be either no fallacy, or no argument at all, real or apparent. A jest, he now tells us, is “ a fallacy so palpable as *not* to be likely to *deceive* any one,” and therefore no fallacy. Here is, if I mistake not, ambiguity, obscurity, or error. That a jest is in some points *analogous* to a fallacy, that it bears “ that resemblance of argument which is calculated to amuse by the contrast,” are points which I do not deny ; but that a jest is a fallacy, that it produces deception, can surely not be admitted. An *imitation* is not a *species*, a *picture of a man* is not a *man*.

Before I conclude, I must say a few words respecting a note to p. 194, in which Dr. Whately mentions the Book of Fallacies to which I have so often referred. The few observations he makes on the character of this work must be admitted to be generally fair and moderate ; but there is one fallacy of which he accuses the author of falling into *perpetually*, which I cannot discover in any of Mr. Bentham’s writings : I mean that of *petitio principii*, as thus distinguished from the use of vituperative

BOOK IS DUE ON THE LAST DATE

**HOME USE
CIRCULATION DEPARTMENT
MAIN LIBRARY**

This book is due on the last date stamped below.
1-month loans may be renewed by calling 642-3405.
6-month loans may be recharged by bringing books
to Circulation Desk.

Renewals and recharges may be made 4 days prior
to due date.

**ALL BOOKS ARE SUBJECT TO RECALL 7 DAYS
AFTER DATE CHECKED OUT.**

REC. CIR. JAN 22 '76

LD21—A—40m-8,'75
(S7737L)

General Library
University of California
Berkeley

YB 23091

BC101

B4

43542

